CHAPTER 26

LIST OF EFFECTIVE TEMPORARY REVISIONS

FOLLOWING IS A COMPLETE LISTING OF ALL ACTIVE TEMPORARY REVISIONS (TR'S). TR'S NOT LISTED SHOULD BE REMOVED. THE ATA NUMBER, CONFIG CODE AND PAGE NUMBER IDENTIFIES THE PAGE PRECEDING THE TR.

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NONE

CHAPTER 26

FIRE PROTECTION

LIST OF EFFECTIVE PAGES

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CHAPTER 26

FIRE PROTECTION

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CR	Trouble Shooting		101	ALL
CR	FIRE EXTINGUISHING - LAVATORY	26-24-00		
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	CONTAINERS, FIRE EXTINGUISHER -			
	LAVATORY	26-24-00		
	Inspection/Check		601	AIRCRAFT WITH SB25-493
CR	BOTTLE, FIRE EXTINGUISHER -			
CR	LAVATORY	26-24-01		
CR	Removal/Installation		401	ALL
CR	THERMOSTAT, FIRE EXTINGUISHER -			
CR	LAVATORY	26-24-02		
CR	Removal/Installation		401	ALL

CHAPTER 26-FIRE PROTECTION

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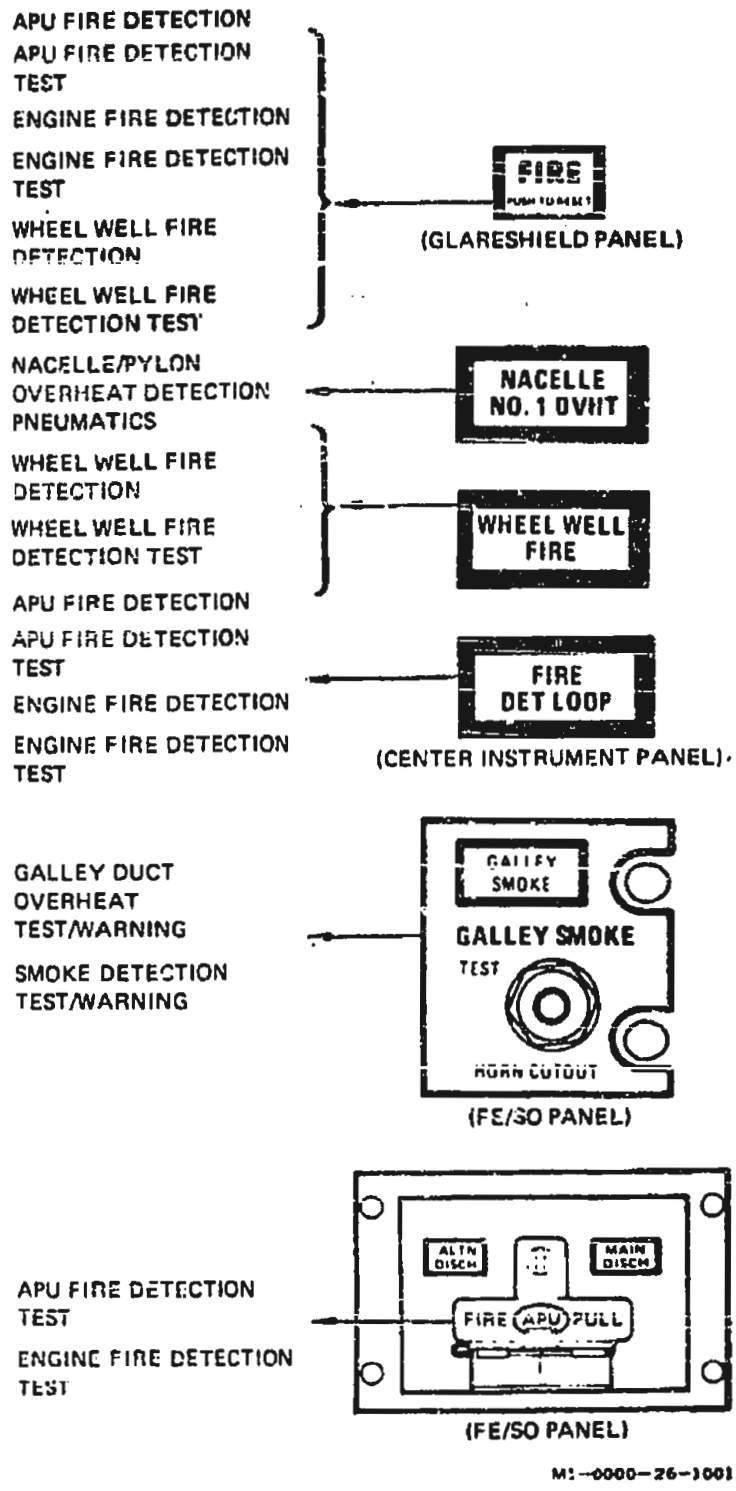
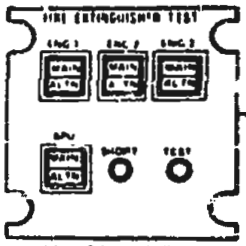
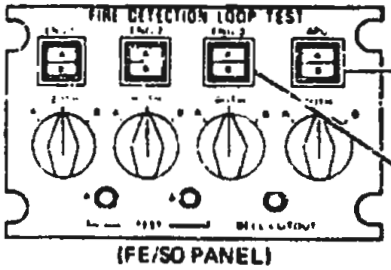


FIRE PROTECTION CONTENTS



FIRE EXTINGUISHER TEST

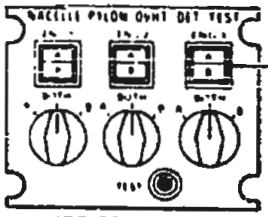
(FE/SO PANEL)



APU FIRE DETECTION
APU FIRE DETECTION TEST

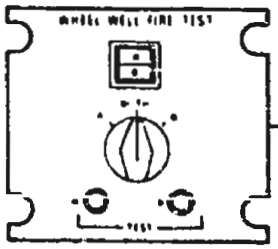
ENGINE FIRE DETECTION
ENGINE FIRE DETECTION TEST

(FE/SO PANEL)



NACELLE/PYLON OVERHEAT DETECTION PNEUMATICS

(FE/SO PANEL)



WHEEL WELL FIRE DETECTION
WHEEL WELL FIRE DETECTION TEST

(FE/SO PANEL)

TITLE	CHAP/SEC
APU FIRE DETECTION	2611
APU FIRE DETECTION TEST	2611
ENGINE FIRE DETECTION	2611
ENGINE FIRE DETECTION TEST	2611
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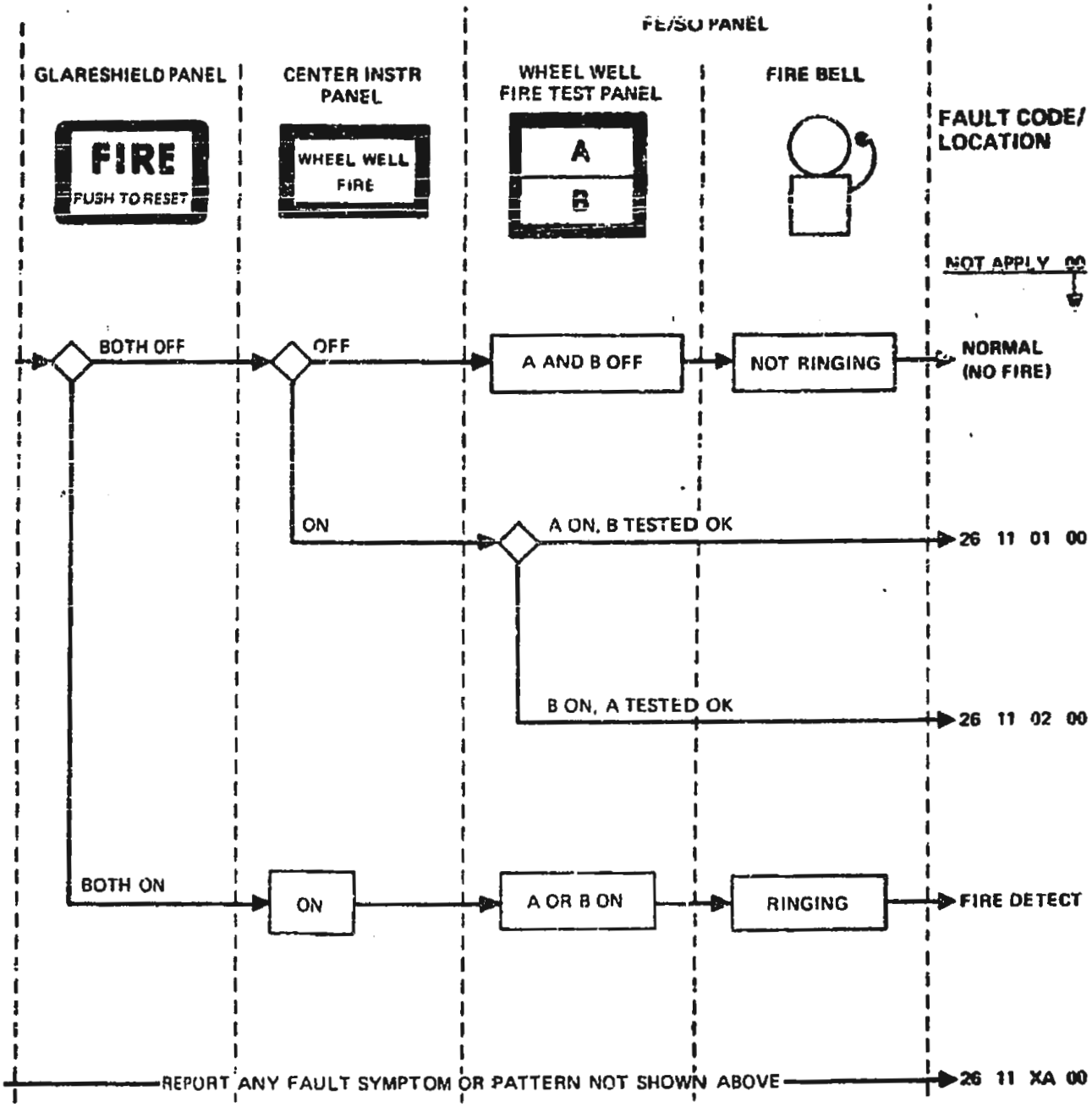
NACELLE/PYLON OVERHEAT DETECTION PNEUMATICS	3622
WHEEL WELL FIRE DETECTION	2611
WHEEL WELL FIRE DETECTION TEST	2611

M1-0001-26-1003

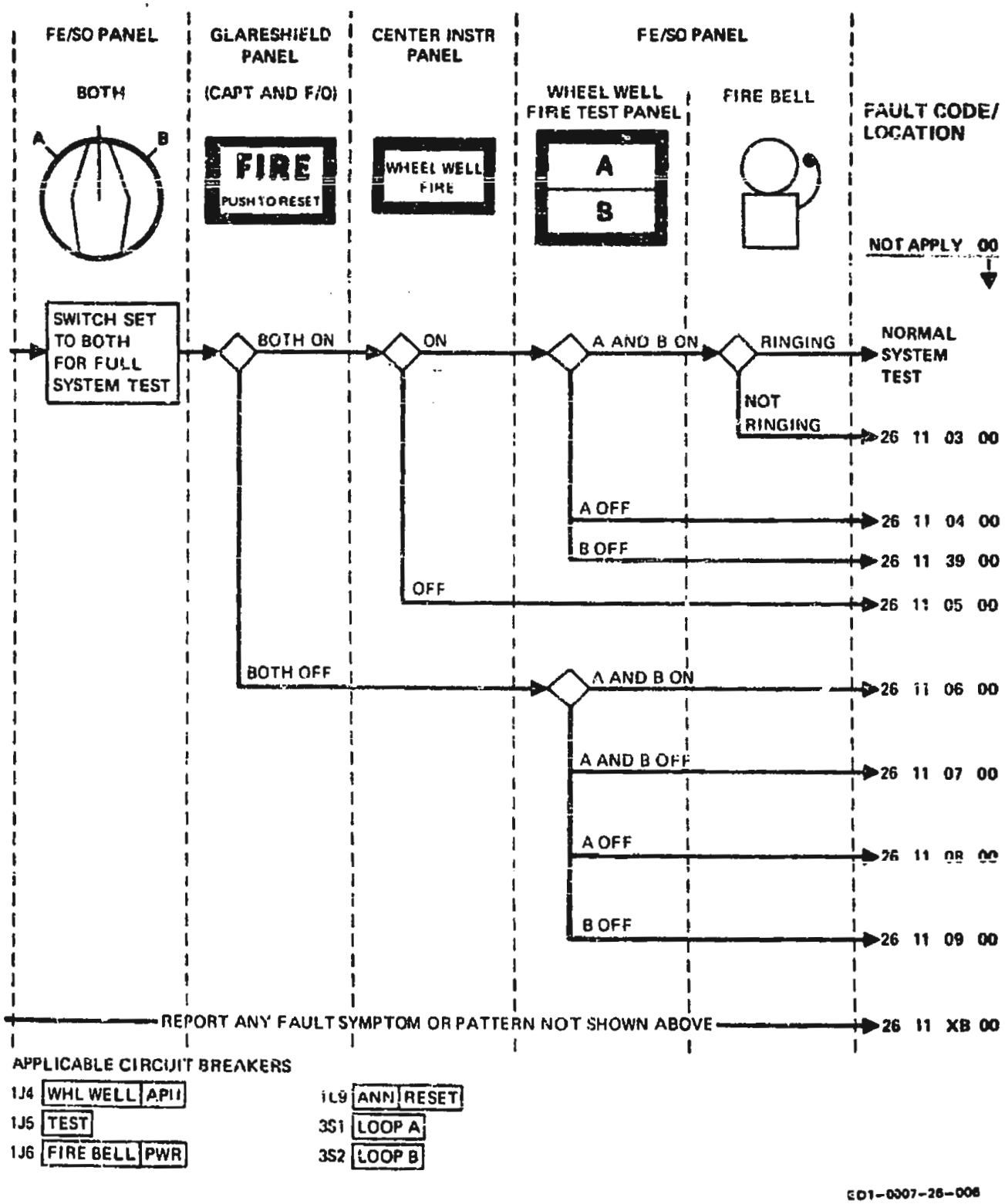


APPLICABLE CIRCUIT BREAKERS

1J4	WHEEL WELL APU	1L9	ANNUNCIATOR RESET
1J5	TEST	3S1	LOOP A
1J6	FIREBELL PWR	3S2	LOOP B

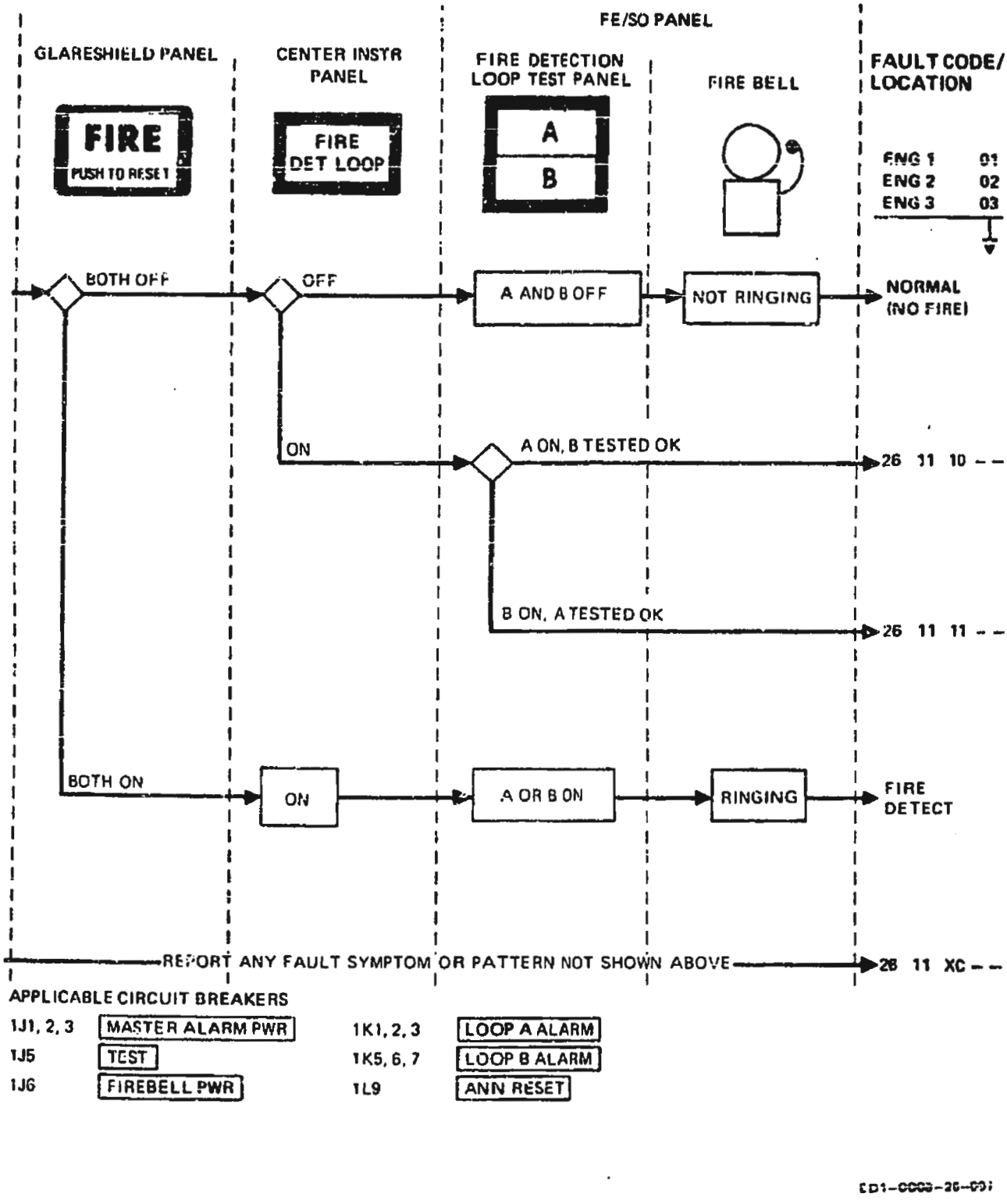
ED1-0304-26-005

R Wheel Well Fire Detection - Fault Codes
Figure 1



R Wheel Well Fire Detection Test - Fault Codes
Figure 2

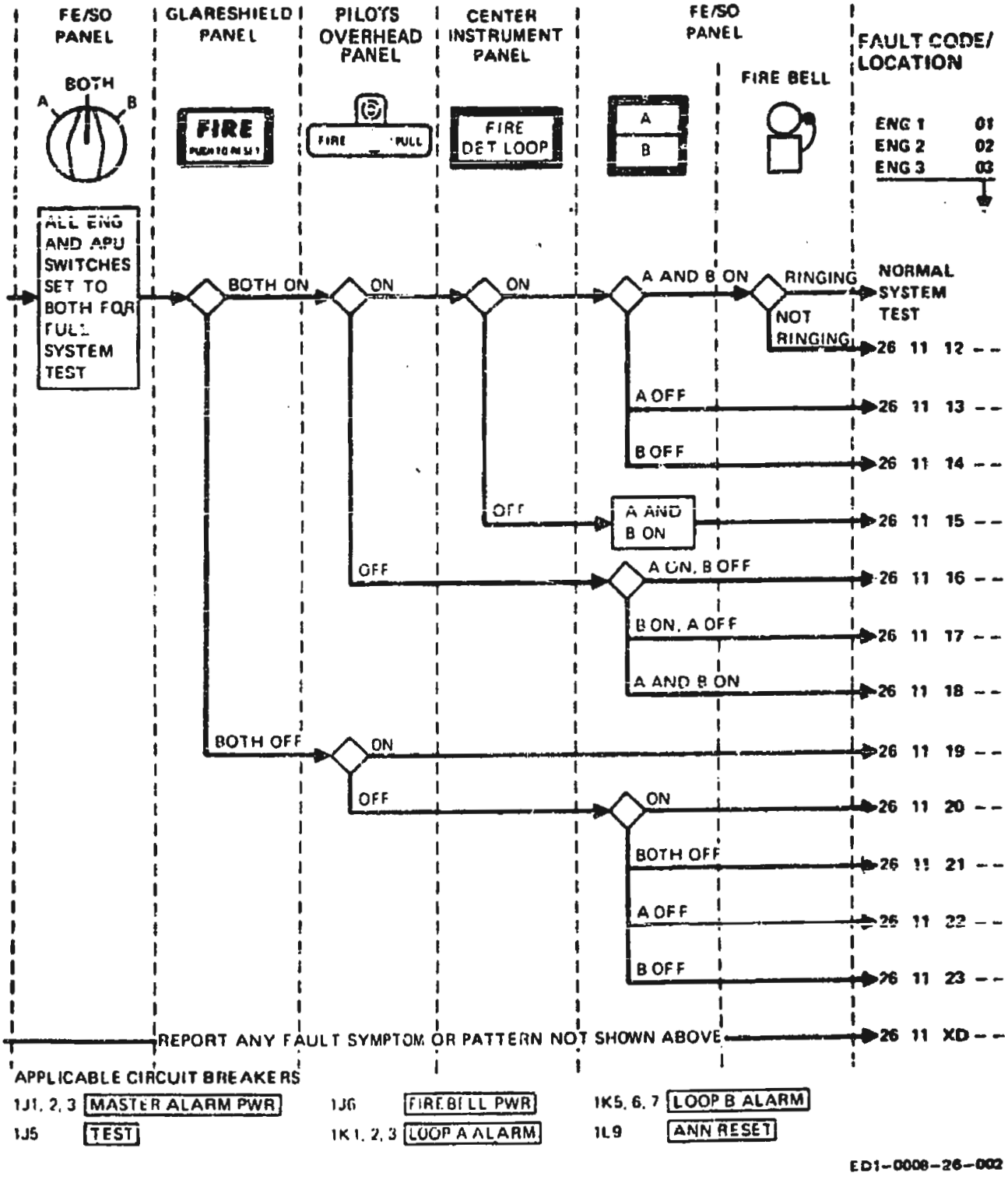
EFFECTIVITY: ALL



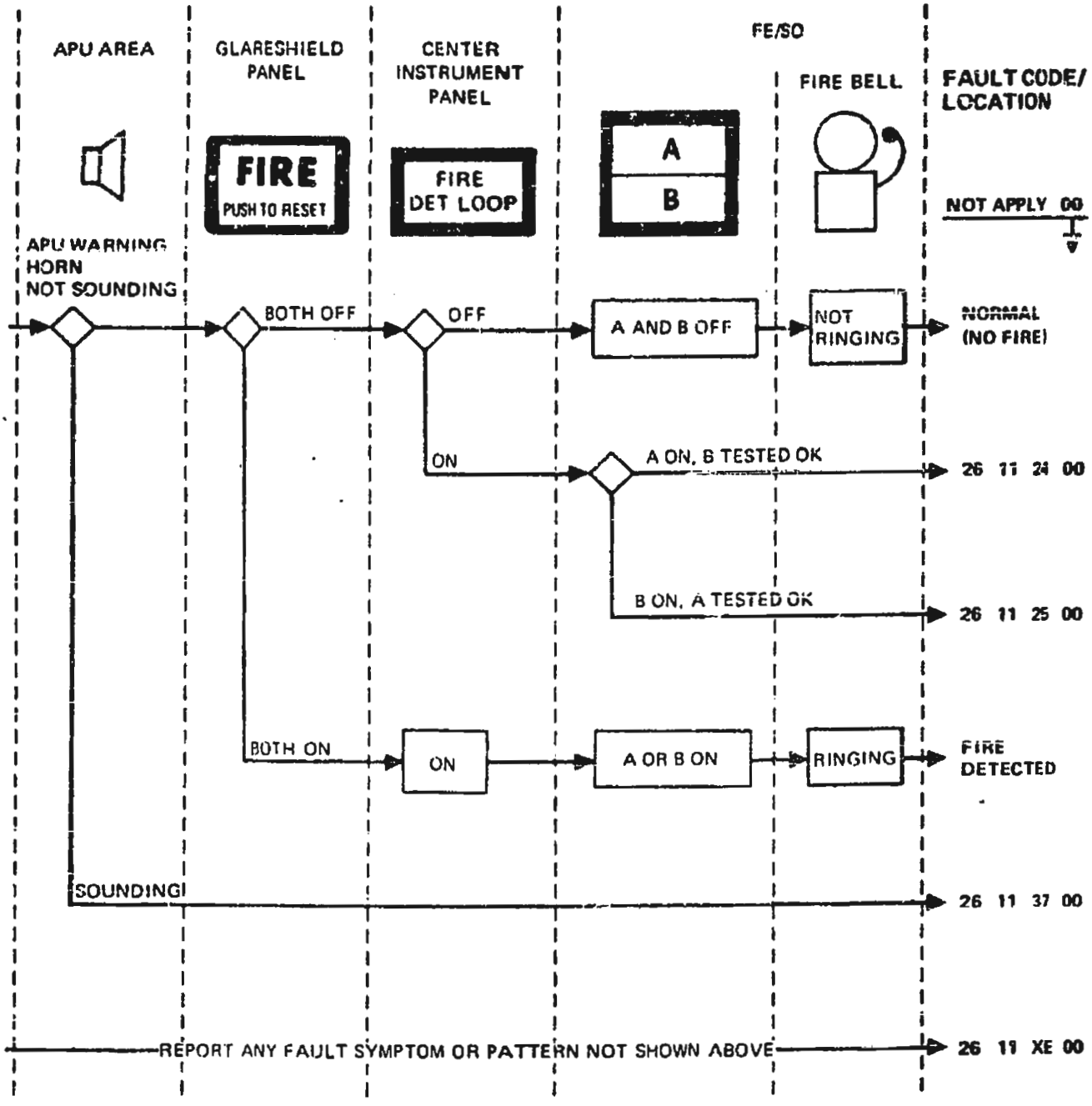
R Engine Fire Detection - Fault Codes
Figure 3

EFFECTIVITY: ALL

26-FAULT CODE DIAGRAM



R Engine Fire Detection Test - Fault Codes
Figure 4



APPLICABLE CIRCUIT BREAKERS

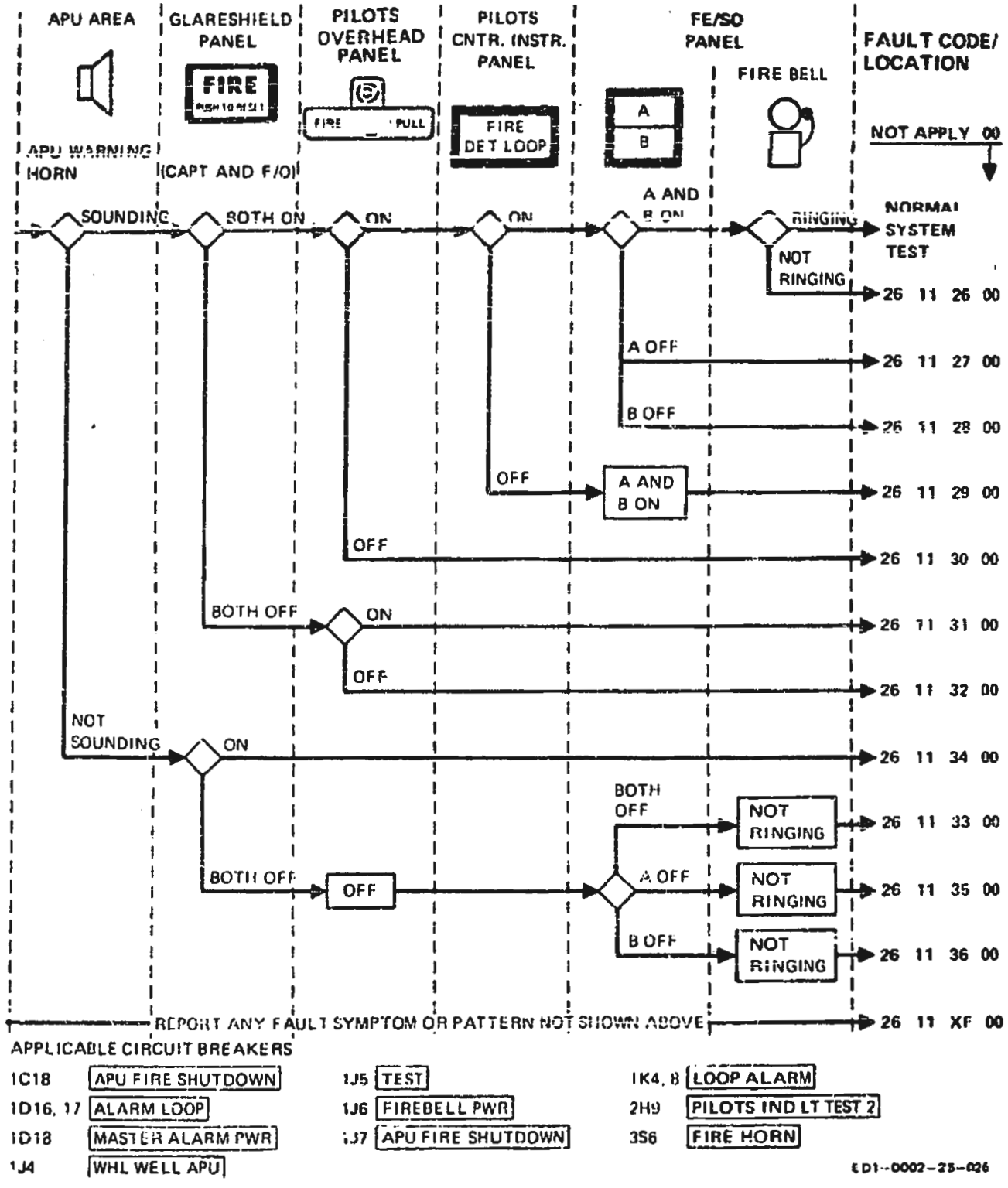
1C18	APU FIRE SHUTDOWN	1J5	TEST	2H9	PILOTS IND LT TEST 2
1D16, 17	ALARM LOOP	1J6	FIRE BELL PWR	3S6	FIRE HORN
1D18	MASTER ALARM PWR	1J7	APU FIRE SHUTDOWN		
1J4	WHL WELL APU	1K4, 8	LOOP ALARM		

ED1-0[illegible]7-26-003

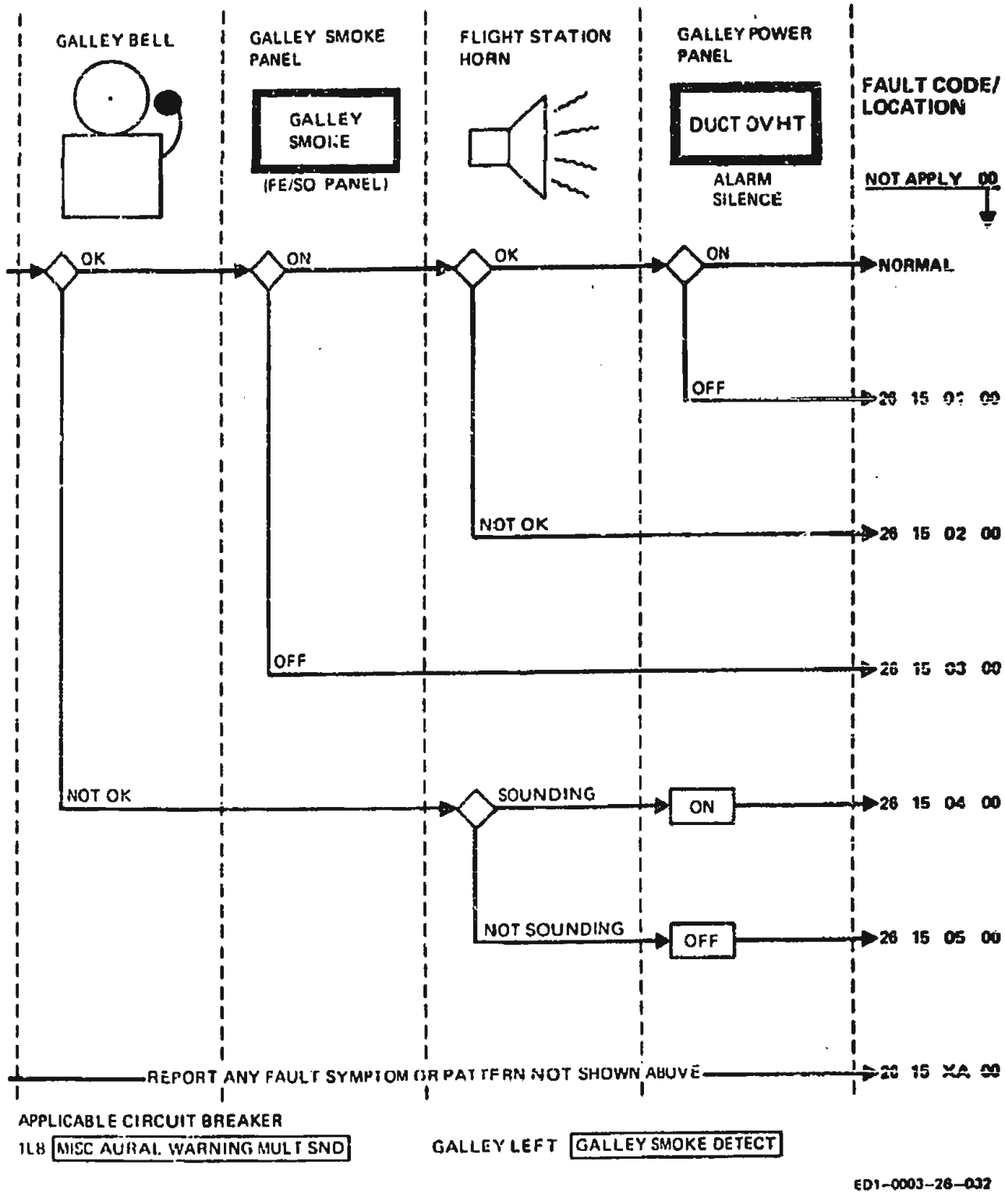
R APU Fire Detection - Fault Codes
Figure 5

EFFECTIVITY: ALL

050B



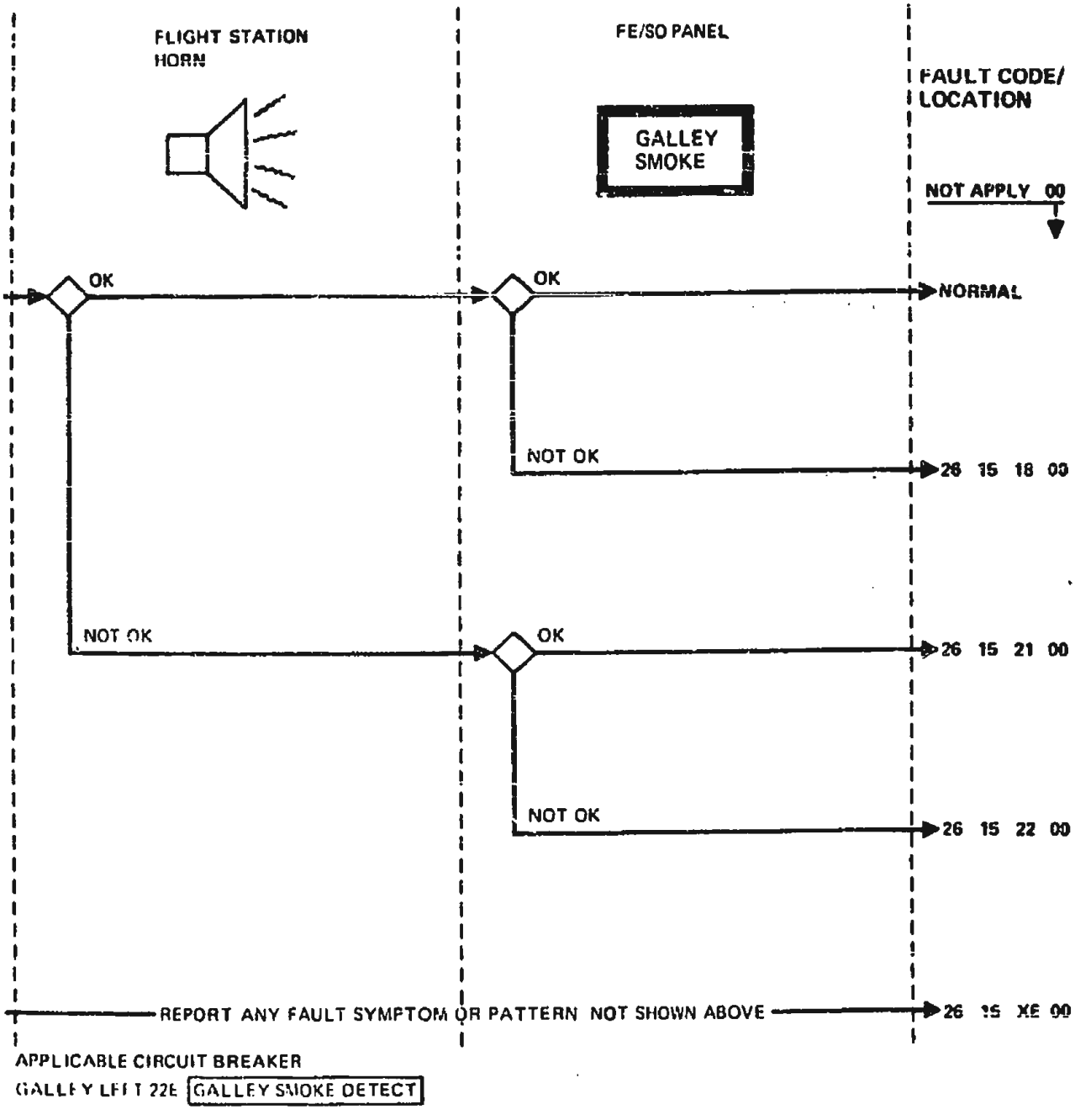
R APU Fire Detection Test - Fault Codes
Figure 6



R Galley Duct OVHT TEST/WARNING - Fault Codes
Figure 7

EFFECTIVITY: ALL

26-FAULT CODE DIAGRAM

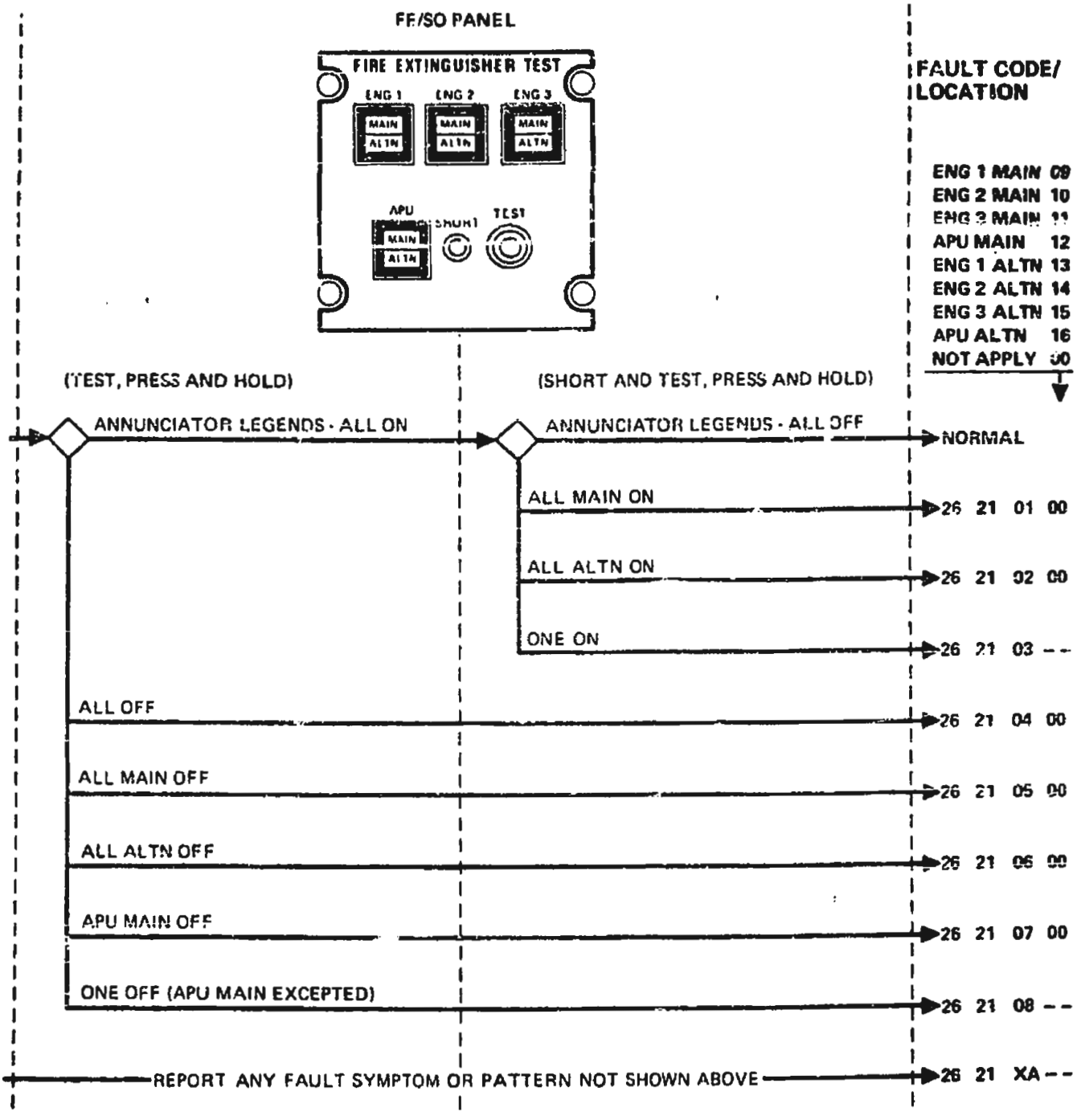


EDI-0005 26-029

R Smoke Detection TEST/WARNING - Fault Codes
Figure 8

R EFFECTIVITY: ALL

26-FAULT CODE DIAGRAM



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R Fire Extinguisher Test - Fault Codes
Figure 9

EFFECTIVITY: ALL

26-FAULT CODE DIAGRAM

FAULT CODE INDEX
TABLE 1

	FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
	26 11 XA 00	1. A Wheel Well Fire Detection fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
R		2. 26-11-00 Fig. 107, 108 Block 1
	26 11 XB 00	1. A Wheel Well Fire Detection Test fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
R		2. 26-11-00 Fig. 107, 108 Block 1
	26 11 XC __	1. An Engine Fire Detection fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
R		2. 26-11-00 Fig. 103, 104 Block 1
	26 11 XD __	1. An Engine Fire Detection Test fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
R		2. 26-11-00 Fig. 103, 104 Block 1
	26 11 XE 00	1. An APU Fire Detection fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
R		2. 26-11-00 Fig. 105, 106 Block 1

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
26 11 XF 00	1. An APU Fire Detection Test fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.) 2. 26-11-00 Fig. 105, 106 Block 1
26 15 XA 00	1. A Galley Duct OVHT TEST/WARNING fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.) 2. 26-15-00 Fig. 104 Block 1
26 15 XE 00	1. A Smoke Detection TEST/WARNING fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.) 2. 26-15-00 Fig. 103 Block 1
26 21 XA __	1. A Fire Extinguisher Test fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.) 2. 26-21-00 Fig. 103 Block 1
R 26 11 01 00 R	1. Fire detection loop A annunciator legend on for MLG wheel well, loop B tested OK. 2. 26-11-00 Fig. 107 Block 1
R 26 11 02 00 R	1. Fire detection loop B annunciator legend on for MLG wheel well, loop A tested OK. 2. 26-11-00 Fig. 107 Block 1

FAULT CODE INDEX
TABLE 1 (CONTINUED)

	FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
	26 11 03 00	1. Fire bell failed to ring during MLG wheel well loop test. A and B test switches pressed simultaneously, all other indications normal.
R		2. 26-11-00 Fig. 108 (Sheet 1) Block 4
R R R	26 11 04 00	1. Loop A annunciator legend off during MLG wheel well loop test. All other indications normal.
R		2. 26-11-00 Fig. 108 (Sheet 2) Block 1
R R R	26 11 05 00	1. WHEEL WELL FIRE annunciator legend off during MLG wheel well loop test. All other indications normal.
R		2. 26-11-00 Fig. 108 (Sheet 1) Block 3
R R R	26 11 06 00	1. Both master FIRE annunciator legends off during MLG wheel well loop test. All other indications normal.
R		2. 26-11-00 Fig. 108 (Sheet 2) Block 1
R R R	26 11 07 00	1. Both master FIRE, and both loop annunciator legends off during MLG wheel well loop test. All other indications normal.
R		2. 26-11-00 Fig. 108 (Sheet 2) Block 1, 2
R R R	26 11 08 00	1. Both master FIRE, and loop A annunciator legends off during test of wheel well fire detection loop. All other indications normal.
R		2. 26-11-00 Fig. 108 (Sheet 1) Block 1, 2

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
R 26 11 09 00	1. Both master FIRE, and loop B annunciator legends off during test of wheel well fire detection loop. All other indications normal.
R	2. 26-11-00 Fig. 108 (Sheet 1) Block 1, 2
R 26 11 10 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) fire detection loop A annunciator legend on steady, intermittent. Loop B tested OK.
	2. 26-11-00 Fig. 103 Block 1
R 26 11 11 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) fire detection loop B annunciator legend on steady, intermittent. Loop A test OK.
	2. 26-11-00 Fig. 103 Block 1
R 26 11 12 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) Fire bell failed to ring during test of engine detection loops. A and B test switches press and hold simultaneously, all other indications normal.
R	2. 26-11-00 Fig. 104 (Sheet 1) Block 5
R 26 11 13 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) loop A annunciator legend off during test of fire detection loops. All other indications normal.
R	2. 26-11-00 Fig. 104 (Sheet 1) Block 3
R 26 11 14 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) loop B annunciator legend off during test of fire detection loops. All other indications normal.
R	2. 26-11-00 Fig. 104 (Sheet 1) Block 3

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
R 26 11 15 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) FIRE DET LOOP annunciator legend off during test of engine fire detection loops. All other indications normal.
R	2. 26-11-00 Fig. 104 (Sheet 1) Block 4
R 26 11 16 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) FIRE PULL handle and loop B annunciator legend off during test of engine fire detection loops. All other indications normal.
R	2. 26-11-00 Fig. 104 (Sheet 2) Block 2, 3, 4
R 26 11 17 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) FIRE PULL handle and loop A annunciator legend off during test of engine fire detection loops. All other indications normal.
R	2. 26-11-00 Fig. 104 (Sheet 2) Block 2, 3, 4
R 26 11 18 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) FIRE PULL handle annunciator legend off during test of fire detection loop. All other indications normal.
R	2. 26-11-00 Fig. 104 (Sheet 1) Block 2
R 26 11 19 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) Both master FIRE annunciator legends off during test of engine fire detection loops. All other indications normal.
R	2. 26-11-00 Fig. 104 (Sheet 2) Block 1

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
R 26 11 20 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) Both master FIRE and FIRE PULL handle annunciator legends off during test of engine fire detection loop. All other indications normal. 2. 26-11-00 Fig. 104 (Sheet 2) Block 1, 2
R 26 11 21 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) Both master FIRE annunciator legends, FIRE PULL and both loop annunciator legends off during test of fire detection loop. All other indications normal. 2. 26-11-00 Fig. 104 (Sheet 2) Block 1, 2, 3
R 26 11 22 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) Both master FIRE Annunciator legends, FIRE PULL handle, and loop A annunciator legends off during test of engine fire detection loop. All other indications normal. 2. 26-11-00 Fig. 104 (Sheet 2) Block 2, 3, 4
R 26 11 23 __	1. (01=ENG 1, 02=ENG 2, 03=ENG 3) Both master FIRE annunciator legends, FIRE PULL handle and loop B annunciator legends off during test of engine fire detection loop. All other indications normal. 2. 26-11-00 Fig. 104 (Sheet 2) Block 2, 3, 4
R 26 11 24 00	1. APU fire detection loop A annunciator legend on, loop B tested OK. 2. 26-11-00 Fig. 105 Block 1

FAULT CODE INDEX
TABLE 1 (CONTINUED)

	FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
R	26 11 25 00	1. APU fire detection loop B annunciator legend on, loop A tested OK.
R		
		2. 26-11-00 Fig. 105 Block 1
	26 11 26 00	1. Fire bell failed to ring during test of APU fire detection loop.
R		2. 26-11-00 Fig. 106 (Sheet 1) Block 5
R	26 11 27 00	1. Loop A annunciator legend off during test of APU
R		fire detection loop. All other indications
R		normal.
R		2. 26-11-00 Fig. 106 (Sheet 1) Block 3
R	26 11 28 00	1. Loop B annunciator legend off during test of APU
R		fire detection loop. All other indications
R		normal.
R		2. 26-11-00 Fig. 106 (Sheet 1) Block 3
R	26 11 29 00	1. FIRE DET LOOP annunciator legend off during test
R		of APU fire detection loop. All other
R		indications normal.
R		2. 26-11-00 Fig. 106 (Sheet 1) Block 4
R	26 11 30 00	1. FIRE PULL handle annunciator legend off during
R		test of APU fire detection loop. All other
R		indications normal.
R		2. 26-11-00 Fig. 106 (Sheet 1) Block 2
R	26 11 31 00	1. Both master FIRE annunciator legends off during
R		test of APU fire detection loop.
R		2. 26-11-00 Fig. 106 (Sheet 2) Block 1

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
R 26 11 32 00	1. Both master FIRE and FIRE PULL handle annunciator legends off during test of APU fire detection loop. All other indications normal including alarm bell.
R	2. 26-11-00 Fig. 106 (Sheet 2) Block 1, 2
R 26 11 33 00	1. APU FIRE warning horn failed to sound; both master FIRE, FIRE PULL handle, and both loop annunciator legends off; fire bell failed to ring during test of APU fire detection loop.
R	2. 26-11-00 Fig. 106 (Sheet 1) Block 2, 3, 5, 6 26-11-00 Fig. 106 (Sheet 2) Block 2, 3, 4
R 26 11 34 00	1. APU FIRE warning horn failed to sound during test of APU fire detection loop. All other indications normal.
R	2. 26-11-00 Fig. 106 (Sheet 1) Block 6
R 26 11 35 00	1. Both master FIRE, FIRE PULL handle, and loop A annunciator legends off during test of APU fire detection loop. All other indications normal.
R	2. 26-11-00 Fig. 106 (Sheet 2) Block 1
R 26 11 36 00	1. Both master FIRE, FIRE PULL handle, and loop B annunciator legends off during test of APU fire detection loop. All other indications normal.
R	2. 26-11-00 Fig. 106 (Sheet 2) Block 1
R 26 11 37 00	1. APU FIRE warning horn sounds, no fire detected. All other indications normal.
	2. 26-11-00 Fig. 106 (Sheet 1) Block 6
26 11 38 00	1. NOT USED.

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
26 11 39 00	1. Loop B annunciator legend off during MLG wheel well loop test. All other indications normal. 2. 26-11-00 Fig. 108 (Sheet 2) Block 1
26 15 01 00	1. DUCT OVHT switchlight on galley power panel did not come on during galley duct overheat test or overheat condition. All other indications normal. 2. 26-15-00 Fig. 104 Block 15
26 15 02 00	1. Flight station horn did not sound during galley duct overheat test or overheat condition. All other indications normal. 2. 26-15-00 Fig. 104 Block 1
R 26 15 03 00 R R	1. GALLEY SMOKE annunciator legend off during test or overheat condition. All other indications normal. 2. 26-15-00 Fig. 104 Block 1
26 15 04 00	1. DUCT OVHT warning bell, in galley, failed to sound during galley duct overheat test or overheat condition. All other indications normal. 2. 26-15-00 Fig. 104 Block 9
R 26 15 05 00 R R R	1. DUCT OVHT warning bell in galley and Flight Station horn did not sound, and DUCT OVHT annunciator legend did not come on during test on ground. All other indications normal. 2. 26-15-00 Fig. 104 Block 1
26 15 06 00	1. NOT USED.
26 15 07 00	1. NOT USED.
26 15 08 00	1. NOT USED.

FAULT CODE INDEX
TABLE 1 (CONTINUED)

	FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
	26 15 09 00	1. NOT USED.
	26 15 10 00	1. NOT USED.
	26 15 11 00	1. NOT USED.
	26 15 12 00	1. NOT USED.
	26 15 13 00	1. NOT USED.
	26 15 14 00	1. NOT USED.
	26 15 15 00	1. NOT USED.
	26 15 16 00	1. NOT USED.
	26 15 17 00	1. NOT USED.
R R R	26 15 18 00	1. Galley smoke detection annunciator legend off during test or smoke condition. All other indications normal. 2. 26-15-00 Fig. 103 Block 2
	26 15 19 00	1. NOT USED.
	26 15 20 00	1. NOT USED.
	26 15 21 00	1. Flight station horn did not operate properly during a smoke detection test or smoke condition. All other indications normal. 2. 26-15-00 Fig. 103 Block 4
R R R	26 15 22 00	1. Flight station horn and FE/SO GALLEY SMOKE annunciator legend off during test or smoke condition. 2. 26-15-00 Fig. 103 Block 8

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
R 26 21 01 00	1. All fire extinguisher MAIN annunciator legends on during short test.
R	2. 26-21-00 Fig. 103 Block 8
R 26 21 02 00	1. All fire extinguisher ALTN annunciator legends on during short test.
R	2. 26-21-00 Fig. 103 Block 8
R 26 21 03 __	1. (09=ENG 1 MAIN, 10=ENG 2 MAIN, 11=ENG 3 MAIN, 12=APU MAIN, 13=ENG 1 ALTN, 14=ENG 2 ALTN, 15=ENG 3 ALTN, 16=APU ALTN) fire extinguisher annunciator legend on during short test.
R	2. 26-21-00 Fig. 103 Block 8
R 26 21 04 00	1. All fire extinguisher annunciator legends off during test.
R	2. 26-21-00 Fig. 103 Block 2
R 26 21 05 00	1. All MAIN fire extinguisher annunciator legends off during test.
R	2. 26-21-00 Fig. 103 Block 6
R 26 21 06 00	1. All ALTN fire extinguisher annunciator legends off during test.
R	2. 26-21-00 Fig. 103 Block 6
R 26 21 07 00	1. APU MAIN fire extinguisher annunciator legend off during test.
R	2. 26-21-00 Fig. 103 Block 7

FAULT CODE INDEX
TABLE 1

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
R 26 21 08 __	1. (09=ENG 1 MAIN, 10=ENG 2 MAIN, 11=ENG 3 MAIN, 04=APU MAIN, 13=ENG 1 ALTN, 14=ENG 2 ALTN, 15=ENG 3 ALTN, 16=APU ALTN) fire extinguisher annunciator legend off during test (APU MAIN excepted).
R	2. 26-21-00 Fig. 103 Block 6

FIRE PROTECTION - DESCRIPTION AND OPERATION

1. General

The fire protection system consists of:

Engine/APU fire detection sensors

MLG wheel well fire detection sensors

Galley smoke detector

Engine/APU fire extinguishers

Portable fire extinguishers

R On aircraft with SB25-493,
R lavatory Fire Extinguishers.

The engine system installation provides maximum separation between fluids and ignition sources. All primary structures in each engine area are separated from fire zones by a horizontal barrier. Engine No. 2 has a vertical firewall. A fire shield isolates the bleed air lines in the air induction inlet from the accessory compartment.

The auxiliary power unit (APU) is housed in a fireproof compartment.

The engine accessory areas and APU compartment ventilation systems remove fumes and provide cooling airflow (Ref. 49-11-00 and 75-20-00).

DETECTION - DESCRIPTION AND OPERATION

1. General

The fire detection system provides visual and aural warning of a fire or overheat condition. There are five fixed detection systems installed in critical areas of the aircraft.

The engines, auxiliary power unit (APU) and the wheel wells detection systems are included in 26-11-00.

The galley detection system is included in 26-15-00.

The systems described in 26-11-00 and 26-15-00 differ in the method of detecting a fire or overheat condition. However, each system provides means to alert the aircrew of a dangerous condition.

The bleed air area overheat warning system detects hot air leakage from the bleed air ducts, and turns on caution and warning lights to alert the flight crew. Details of the overheat and warning system are described in 36-22-00.

FIRE DETECTION SYSTEM - DESCRIPTION AND OPERATION

1. General

There are five independent fire detection systems to provide aural and visual indications of an overheat or fire condition in:

The three power plants, zones 412, 432, and 422

The auxiliary power unit (APU) compartment, zone 319

The main landing gear wheel wells, zones 148 and 149

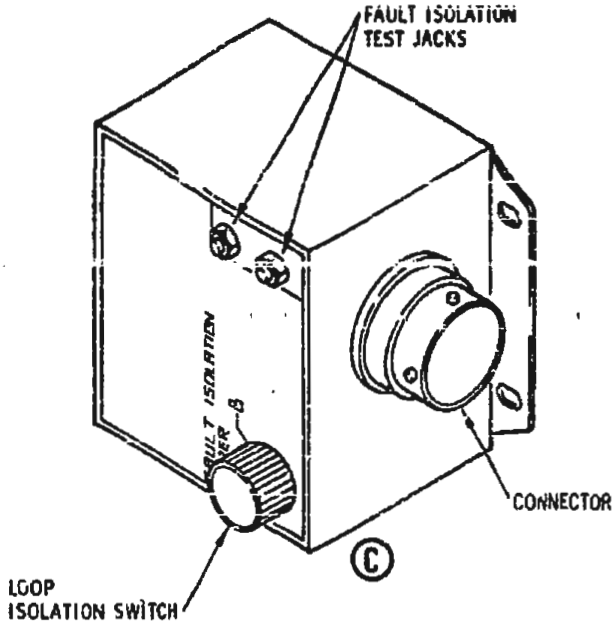
Each detection system companies two fire-sensing loops and a fire detector control unit (Ref. Fig. 1) for each fire zone. The fire-sensing loops (Loop A and Loop B) are mounted and routed together.

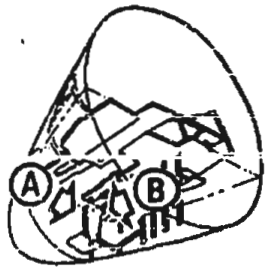
R There are seven sections of fire detection sensors on each engine which are connected in series by interconnect cable harnesses.

Engine No. 2 has an additional section mounted on the engine No. 1 firewall. There are three sections of fire detection sensors connected in series mounted in the APU compartment. In each MLG wheel well there are two sections of sensors. The four sensors are connected in series. The sensors are thermistor-type, continuous-sensing elements mounted on aluminum or steel support tubes. The electrical resistance of each thermistor decreases as temperature increases.

There are five fire detector control units in the forward electronic service center, zone 113. All control units are identical and interchangeable. Each control unit contains the control circuitry for both A and B loops for each detection system. Each control unit has a single electrical connector, a fault isolation switch, and fault isolation test jacks. The test switch and test jacks allow the technician to troubleshoot the fire detection system and determine what line replaceable unit is faulty. Each control unit monitors the resistance values of its fire-sensing loops. Each control circuit monitors a single fire-sensing loop. When a resistance value is received which corresponds to a fire condition, the relays in the control circuit are energized and provide an output voltage to activate the fire warning indicators. The detection system in each area is capable of detecting a fire with one sensing element loop failed.

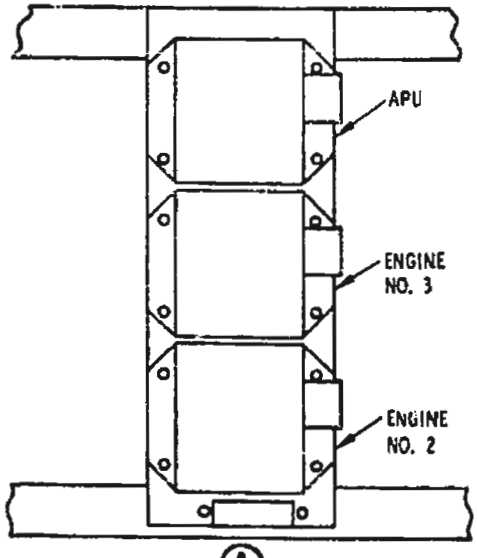
The following fire warning indicators are provided:



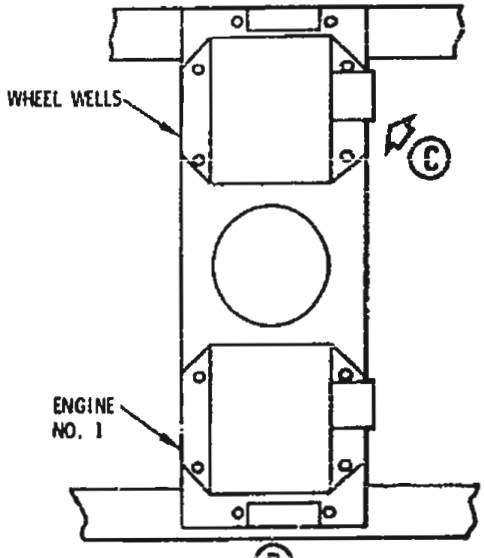


ZONE 112

FORWARD ELECTRONIC SERVICE CENTER



FIRE DETECTOR
INSTALLATION
LEFT SIDE



FIRE DETECTOR
INSTALLATION
RIGHT SIDE

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Fire Detector Control Units
Figure 1

A red FIRE PULL indicator on each fire emergency engine shutoff and APU fire emergency shutoff control handle. The three engine control handles are located on the pilots overhead panel, zone 210. The APU control handle is located on the Flight Engineer/Second Officers upper panel, zone 215.

A red master FIRE, PUSH TO RESET switchlight for the Captain, and one for the First Officer on the glareshield panel, zone 210

An amber FIRE DET LOOP indicator light and a red WHEEL FIRE DET LOOP warning light on the pilots center instrument panel, zone 210

Amber A and B indicator lights located on the Fire Detection Loop Test Panel on the Flight Engineer/Second Officers upper panel for ENG 1, ENG 2, ENG 3, APU, and the main landing gear wheel wells

A fire alarm bell in the flight station

A red FIRE indicator light on the APU external control panel located on the bottom centerline of the fuselage, zone 142

An APU fire warning horn in the aft body, zone 317

A FIRE DETECTION LOOP TEST panel and a WHEEL WELL FIRE TEST panel are provided in the Flight Engineer/Second Officers upper panel. Each test panel contains the following:

Loop A and B indicator lights

Loop A and Loop B pushbutton test switch

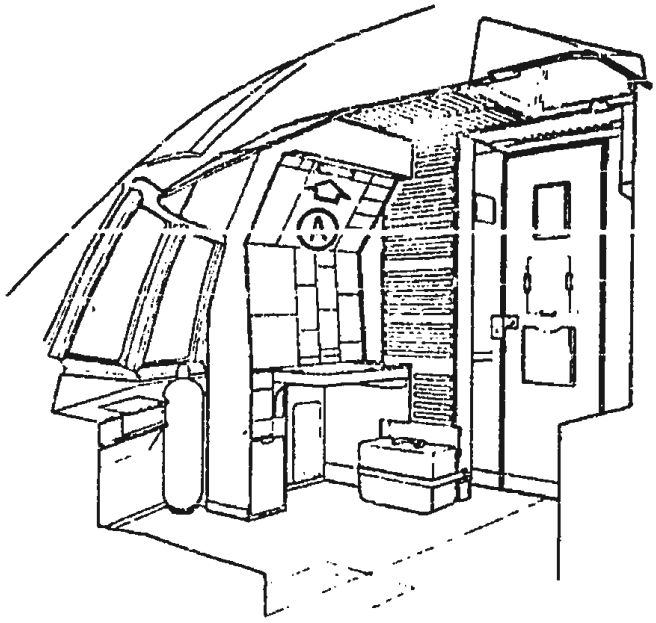
Fire detection rotary test switches

The FIRE DETECTION LOOP TEST panel also contains a BELL CUTOUT pushbutton switch.

Each rotary test selection switch has three positions: A, BOTH, and B. The rotary switches can be used to select individual fire-sensing loops for testing. When one loop has failed, the aircraft can be dispatched only by selecting the operable loop on the rotary selector. Each switch is placed in the BOTH position for normal system operation (Ref. Fig. 2).

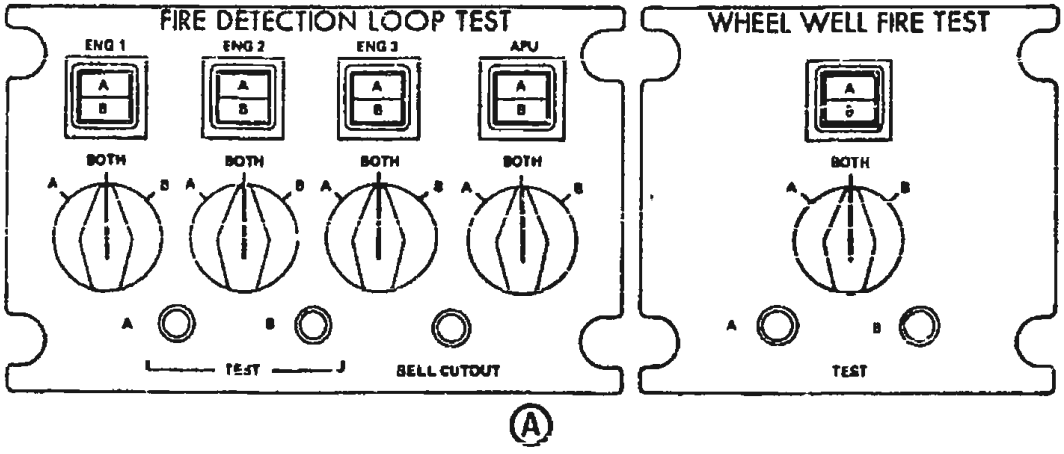
2. Operation

Fire detection is automatic when the fire detector system circuit breakers are closed (Ref. Fig. 3).



ZONE 215

FLIGHT ENGINEER/SECOND OFFICERS STATION



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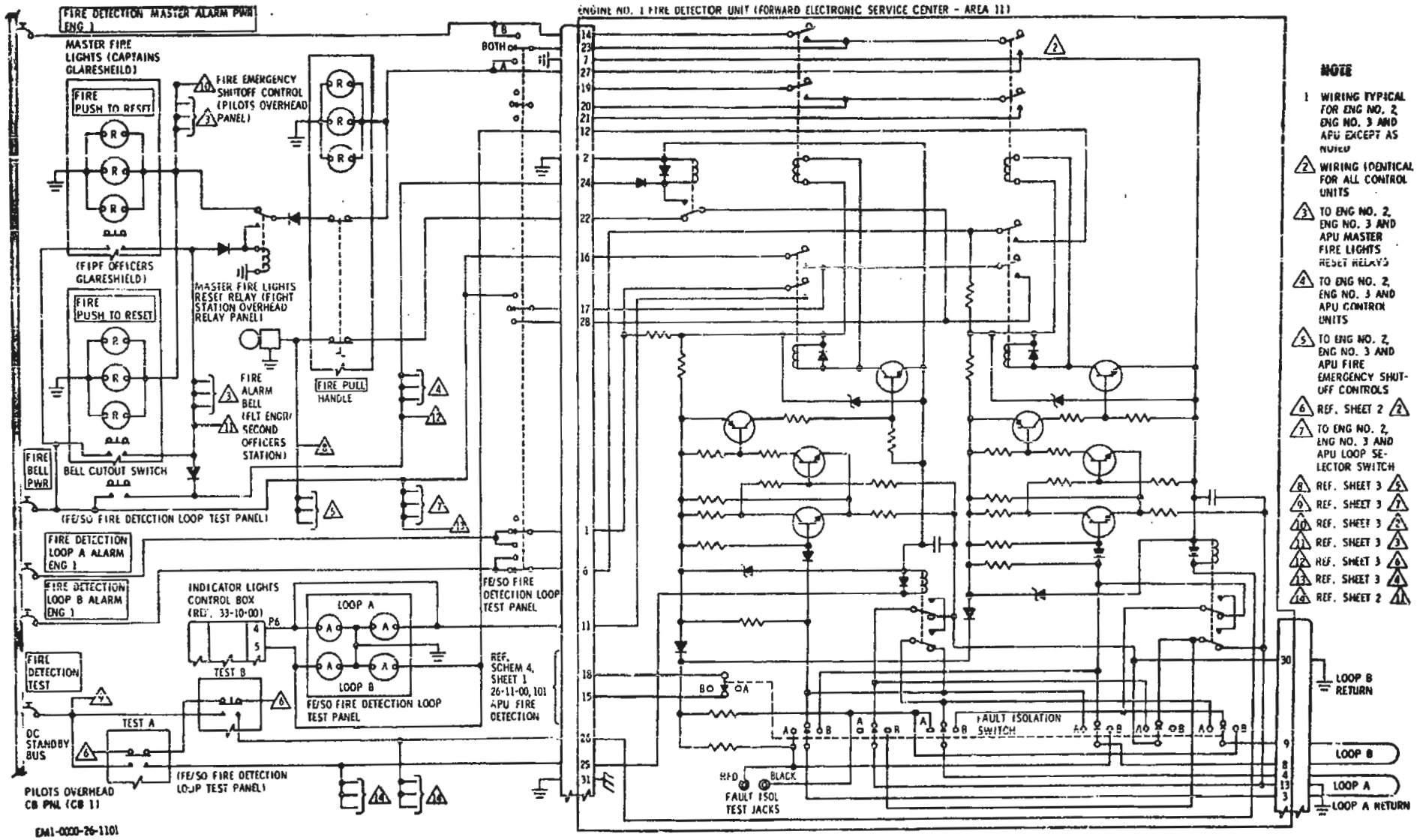
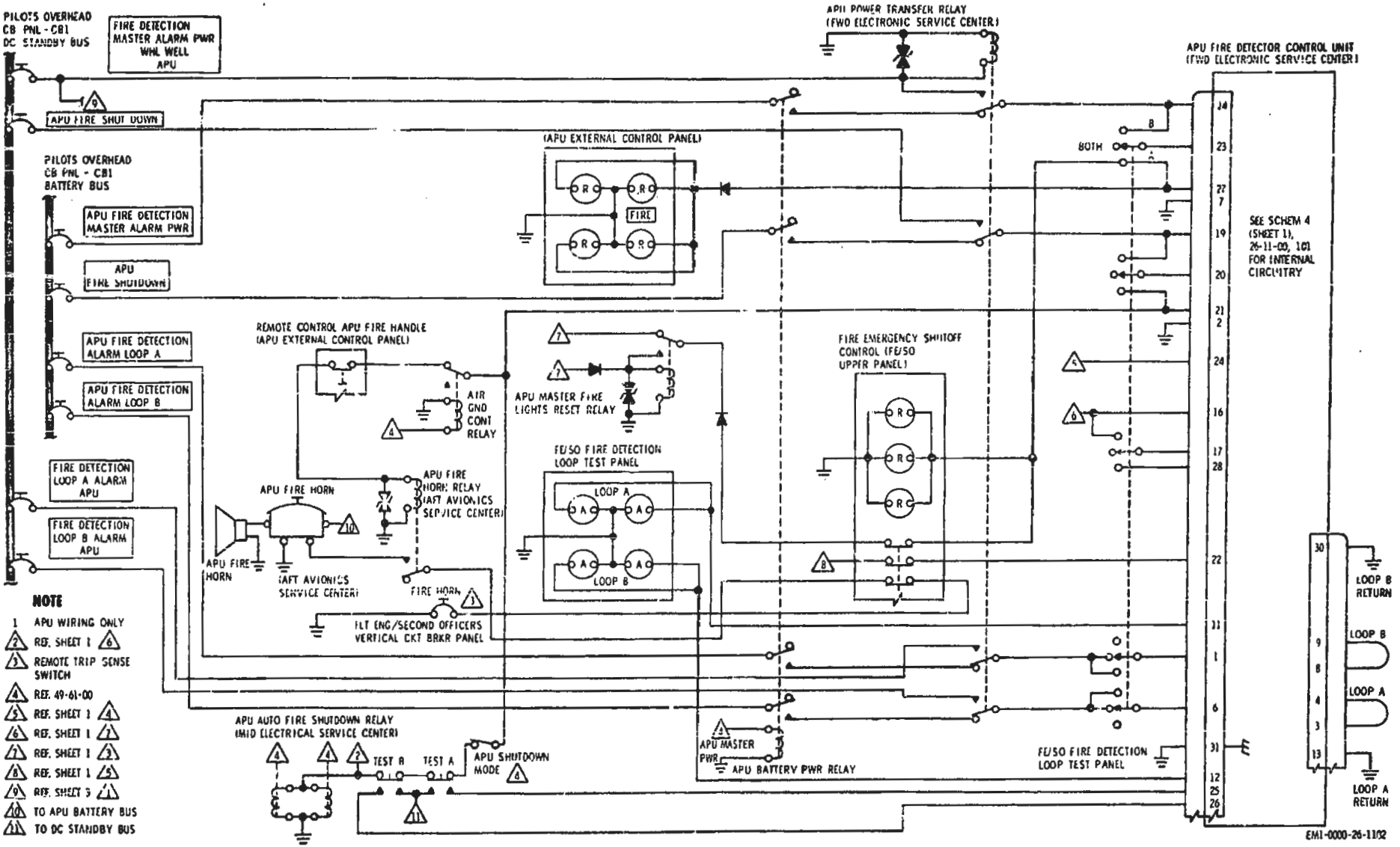
Fire Detection Loop Test and Wheel Well Fire Test Panels
Figure 2

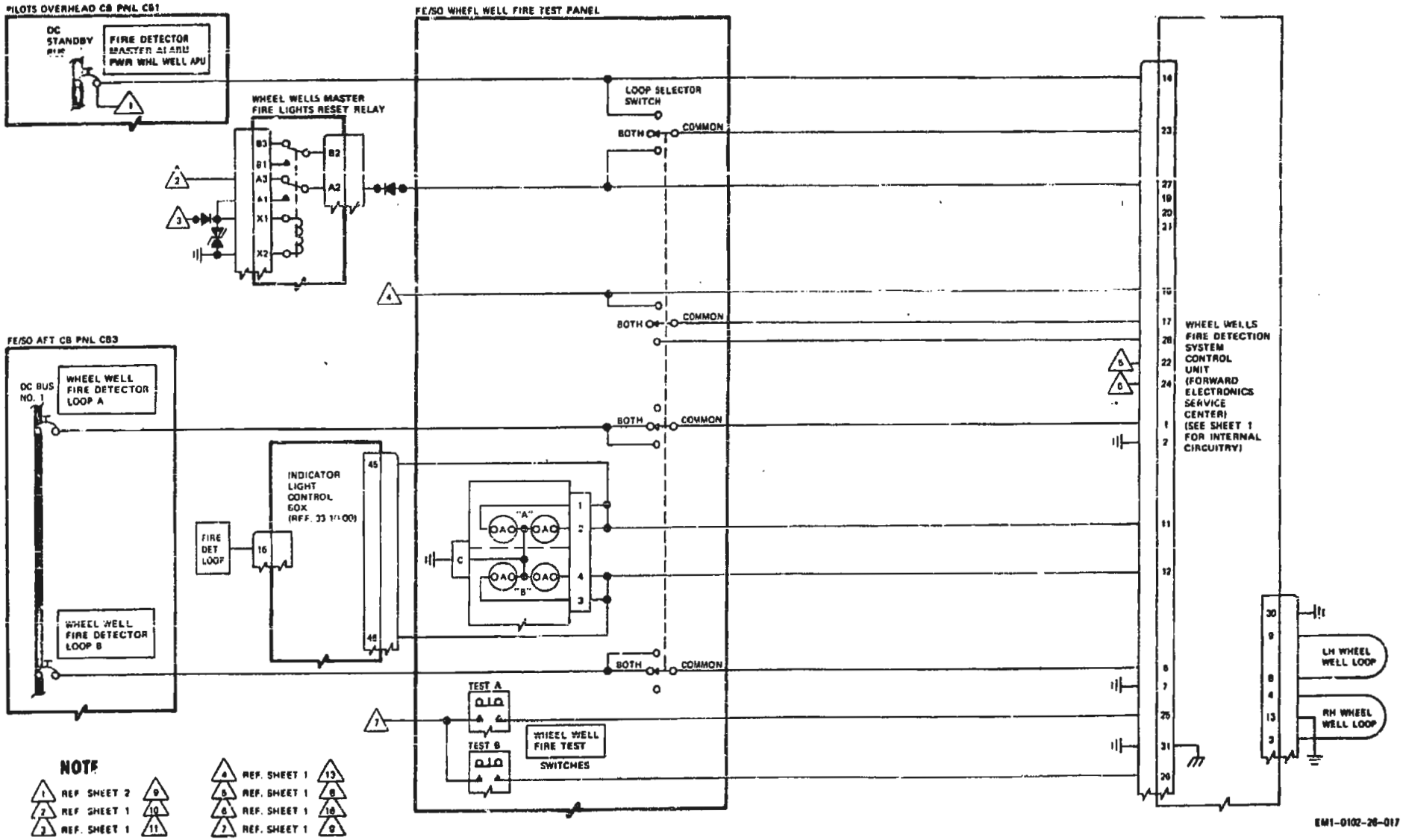

FIRE DETECTION MASTER ALARM PWR (ENG 1)
MASTER FIRE LIGHTS (CAPTAINS GLARESHEILD)
FIRE PUSH TO RESET
(FIRE OFFICERS GLARESHIELD)
FIRE EMERGENCY SHUTOFF CONTROL (PILOTS OVERHEAD PANEL)
MASTER FIRE LIGHTS RESET RELAY (FIGHT STATION OVERHEAD RELAY PANEL)
FIRE ALARM BELL (FLT ENGR/ SECOND OFFICERS STATION)
FIRE PULL HANDLE
FIRE BELL PWR
BELL CUTOUT SWITCH
(FE/SO FIRE DETECTION LOOP TEST PANEL)
FIRE DETECTION LOOP A ALARM ENG 1
FIRE DETECTION LOOP B ALARM ENG 1
INDICATOR LIGHTS CONTROL BOX (REF. 33-10-00)
P6
TEST B
TEST A
LOOP A
LOOP B
FE/SO FIRE DETECTION LOOP TEST PANEL
REF. SCHEM 4, SHEET 1 26-11-00, 101 APU FIRE DETECTION
FIRE DETECTION TEST
DC STANDBY BUS
PILOTS OVERHEAD CB PNL (CB 1)
EM1-0000-26-1101
ENGINE NO. 1 FIRE DETECTOR UNIT (FORWARD ELECTRONIC SERVICE CENTER - AREA 11)
FAULT ISOLATION SWITCH
RED
BLACK
FAULT ISOL TEST JACKS
LOOP B RETURN
LOOP B
LOOP A
LOOP A RETURN
NOTE
1 WIRING TYPICAL FOR ENG NO. 2, ENG NO. 3 AND APU EXCEPT AS NOTED
2 WIRING IDENTICAL FOR ALL CONTROL UNITS
3 TO ENG NO. 2, ENG NO. 3 AND APU MASTER FIRE LIGHTS RESET RELAYS
4 TO ENG NO. 2, ENG NO. 3 AND APU CONTROL UNITS
5 TO ENG NO. 2, ENG NO. 3 AND APU FIRE EMERGENCY SHUT-OFF CONTROLS
6 REF. SHEET 2 2
7 TO ENG NO. 2, ENG NO. 3 AND APU LOOP SELECTOR SWITCH
8 REF. SHEET 3 5
9 REF. SHEET 3 7
10 REF. SHEET 3 2
11 REF. SHEET 3 3
12 REF. SHEET 3 6
13 REF. SHEET 3 4
14 REF. SHEET 2 1

Fire Detection Simplified Schematic
Figure 3 (Sheet 1)

R EFFECTIVITY: ALL
R
001B



Fire Detection Simplified Schematic
Figure 3 (Sheet 2)



Fire Detection Simplified Schematic
Figure 3 (Sheet 3)

When a fire condition exists in a fire zone, the temperature rise causes a decrease in resistance of the sensing elements. At a predetermined resistance value, the relays of the monitoring circuit energize. The closed relay contacts apply 28V dc to the fire warning indicating components. Fire warning is indicated as follows:

The red FIRE PULL indicator on the applicable fire emergency shutoff control handle illuminates if the fire is in the engine, engine compartments, or APU compartment.

The red master FIRE, PUSH TO RESET switchlights come on.

The amber FIRE DET LOOP or red WHEEL WELL FIRE DET LOOP indicator light, as applicable, flashes on and off, and then remains on.

The applicable amber loop A and B lights on the FIRE DETECTION LOOP TEST panel or WHEEL WELL FIRE TEST panel come on.

The fire alarm bell rings.

If the fire is in the APU compartment the following will occur in addition to the aforementioned fire warning indicatior when the aircraft is on the ground:

The red FIRE indicator light on the APU external control panel comes on.

The APU fire warning horn sounds.

The APU automatically shuts down.

If the aircraft is airborne, an air/ground sensing relay (Ref. 32-63-00) prevents the APU fire warning horn from sounding. The relay also allows the Flight Engineer/Second Officer to preselect APU automatic or manual shutdown (Ref. 49-61-00).

The fire emergency engine shutoff control indicator remains illuminated until the area temperature cools down. The fire alarm bell and the master FIRE warning switchlights can be turned off by depressing either switchlight, or by pulling the fire emergency shutoff handle at the Flight Engineer/Second Officers station. The fire alarm bell can be turned off by depressing the BELL CUTOUT pushbutton switch. The APU fire warning horn can be silenced by pulling either of the APU fire emergency shutoff handles.

When the fire is extinguished, the temperature drops which causes the sensing elements to return to their normal resistance

value. The relay circuits deenergize and the fire warning indicating components deactivate.

Since each of the fire-sensing loops is contained in a separate monitoring circuit, a ground fault in any one sensing element energizes only the relays in the faulted circuit. A warning signal from only one sensing element loop initiates either the loop A or the loop B fire warning indicators. The integrity of the system is checked by depressing the opposite loop test switch. If the remaining fire indicating components come on and then go off when the loop test switch is released, the companion loop is operational and fire detection for the area will operate normally on one channel.

The warning circuit activated by a ground-faulted loop is turned off by placing the fire detection rotary test switch in the position of the operational loop. Placing a test switch in either the loop A or loop B position switches the circuits so that only the selected loop need operate for fire warning. Depressing the loop test switch for the selected loop position causes all fire warning indicating components to come on. They go off when the loop test switch is released.

During a loop integrity check, if the fire warning indicators and one loop light for an area do not come on, an open is indicated for that loop circuit. Placing the loop selector switch in the position of the operational loop restores fire detection capability.

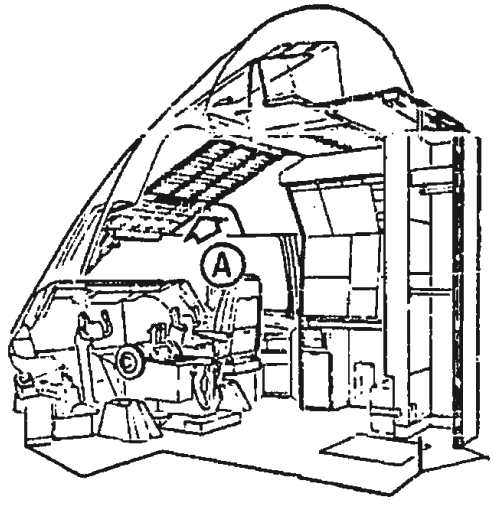
3. Engine Fire Emergency Shutoff Control

A. Description

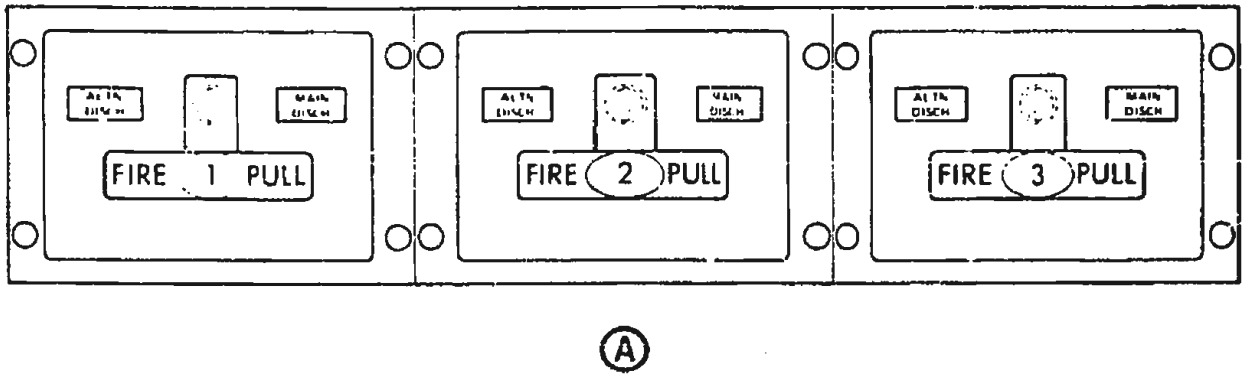
Three fire emergency engine shutoff controls are located on the pilots overhead panel, zone 210 (Ref. Fig. 4).

Each engine fire emergency shutoff control handle has an integral guard. The guard covers the extinguishing agent switch on the panel behind the control handle. Each control handle has the number of the associated engine on the forward surface. The control handles have integral indicators which, when illuminated, display the legend FIRE PULL on a red background.

Each shutoff control contains 10 normally closed switches. The switches are actuated when the control handle is pulled through a nominal 1-inch stroke. A 7- to 9-pound force is required to move the control handle from either extreme position.



FLIGHT STATION
ZONE 210



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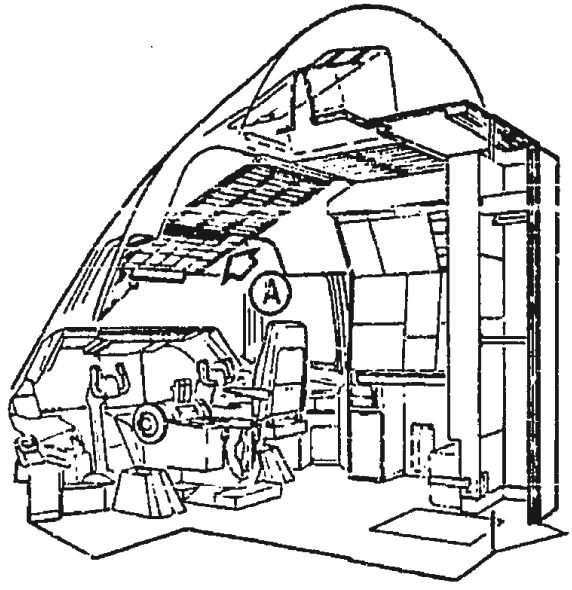
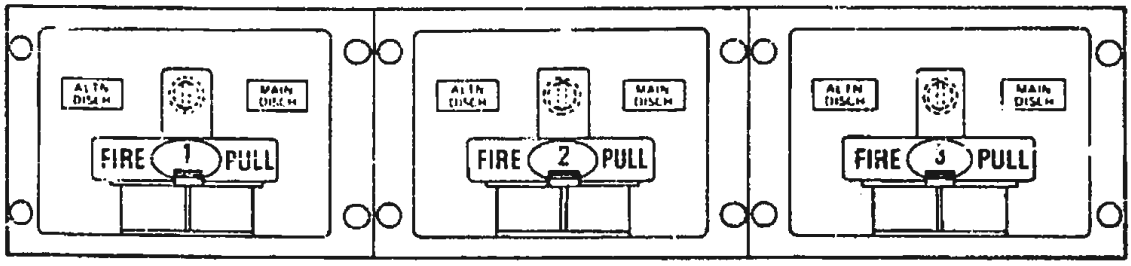
Fire Emergency Engine Shutoff Control
Figure 4





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Fire Emergency Engine Shutoff Control
Figure 4

On aircraft 001-008 with SB26-007, and 009-999, a spring-loaded latch mechanically locks the handle in the stowed position. As the fingers go around the handle from the top side the latch is released.

B. Operation

When a fire condition exists, 28V dc is applied to the lighting circuit of the applicable control handle which illuminates the FIRE PULL legend. Pulling the control handle approximately 1 inch actuates the internal switches thereby shutting down the applicable engine. When the control handle is pulled:

The fuel emergency shutoff valve (Ref. 28-24-00) closes.

The hydraulic supply shutoff valve (Ref. 29-11-00) closes.

The engine isolation valve (Ref. 36-11-00) closes.

On aircraft with SB80-007, the engine isolation valve can be opened when the fire handle is pulled, by latching the engine start switch. This permits the engine to be motored to "blow out" fires without the use of additional procedures if the fire handle has been pulled.

On aircraft 001-031 without SB26-016, the ventilation air inlet shutoff valve (Ref. 75-21-00) closes.

The generator (Ref. 24-20-00) deenergizes.

The extinguishing agent discharge switch is exposed.

The fire bell is turned off.

The master fire warning lights are turned off.

4. APU Engine Fire Emergency Shutoff Control

A. Description

An APU engine fire emergency shutoff control is located on the Flight Engineer/Second Officers upper panel, zone 215 (Ref. Fig. 5).

The APU engine fire emergency shutoff control handle has an integral guard. The guard covers the extinguishing agent

switch on the panel behind the control handle. The control handle has an integral indicator, which, when illuminated, displays the legend FIRE PULL on a red background.

The shutoff control contains 10 normally closed switches. The switches are actuated when the control handle is pulled through a nominal 1-inch stroke. A 7- to 9-pound force is required to move the control handle from either extreme position.

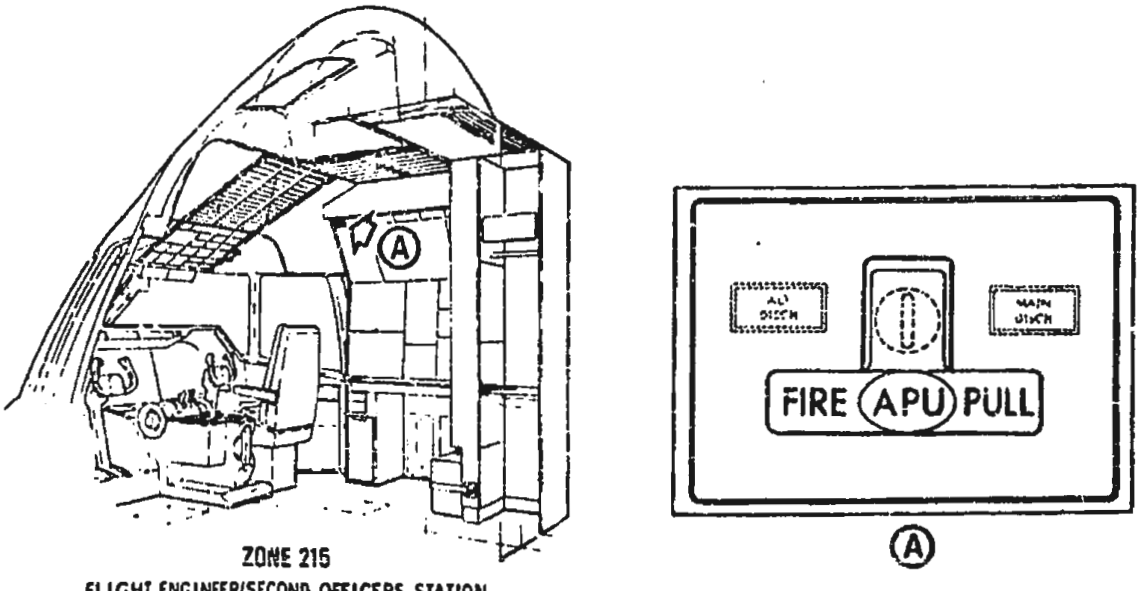
B. Operation

When a fire condition exists, 28V dc is applied to the lighting circuit of the APU control handle which illuminates the FIRE PULL legend. Pulling the control handle approximately 1 inch actuates the internal switches thereby shutting down the APU engine. When the control handle is pulled:

The APU primary and secondary emergency fuel shutoff valves (Ref. 49-61-00) close.

The APU duct isolation valve (Ref. 36-12-00) closes.

The APU vent air ejector doors (Ref. 49-61-00) closes.



APU Engine Fire Emergency Shutoff Control
Figure 5

The APU vent valve (Ref. 49-61-00) closes.

The generator (Ref. 24-24-00) deenergizes.

The extinguishing agent discharge switch is exposed.

The fire bell is turned off.

The master fire warning lights are turned off.

The APU fire horn (if the aircraft is on the ground) is silenced.

5. Remote Control APU Fire Handle

A. Description and Operation

The remote control APU fire handle does not have an integral illuminated indicator. The description and operation of this item is included in 26-21-00.

6. Combustion and Zone 3 Fire Detectors

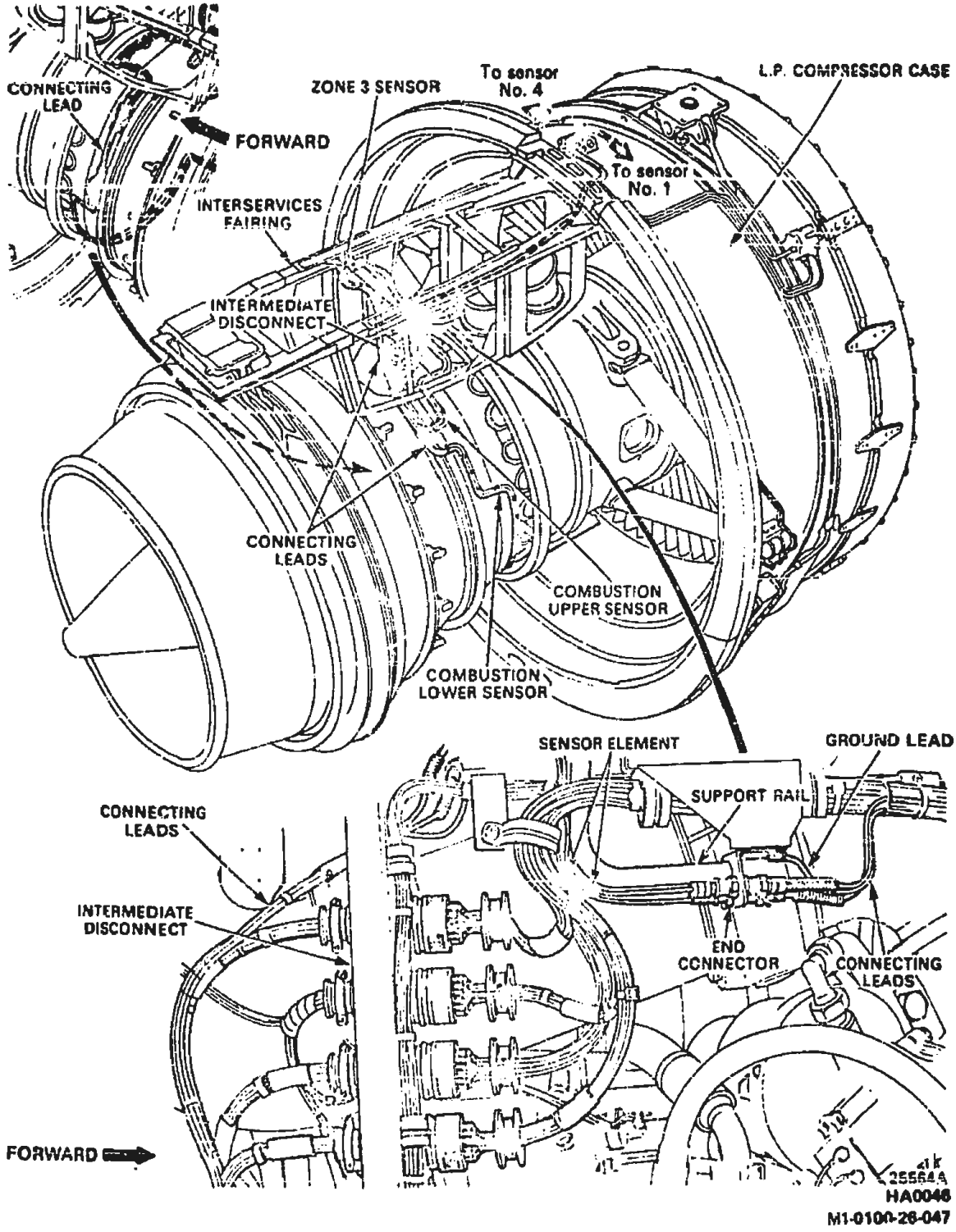
A. Description and Operation

Two fire detector sensor assemblies (Ref. Fig. 6) are located on the combustion section outer case of each engine, zones 412, 422, and 432. One sensor assembly is routed across the top of the combustion section to monitor the upper half of the case and the other sensor assembly is routed across the bottom of the combustion section to monitor the lower half of the case. The sensor assemblies are secured to bosses and brackets on the case and brackets on the engine fireseal.

Another sensor assembly (Ref. Fig. 6) is located inside the interservices fairing (Zone 3) to detect, should it occur, a flame breakthrough of the combustion section upper fairing. The sensor assembly is secured to brackets on the interservices fairing upper support structure.

Each sensor assembly consists of two elements attached by asbestos cushioned dual clips to a support rail. Integral brackets at each end of the rail and at intervals along its length are provided for securing it to the engine. The elements are identified at the end brackets by the letter A or B.

The sensor assemblies are connected electrically in series, and when connected to the accessory zone sensor assemblies



Combustion and Zone 3 Fire Detector Sensor Assemblies
Figure 6 (Sheet 1)

and aircraft-mounted fire detector control unit, form two complete loops A and B. The connecting leads between the sensor assemblies are fire resistant and are fitted with pin or socket end connectors that mate with pin or socket end connectors on the sensor elements. Ground leads, connected to the support rail end brackets, provide ground continuity throughout the system.

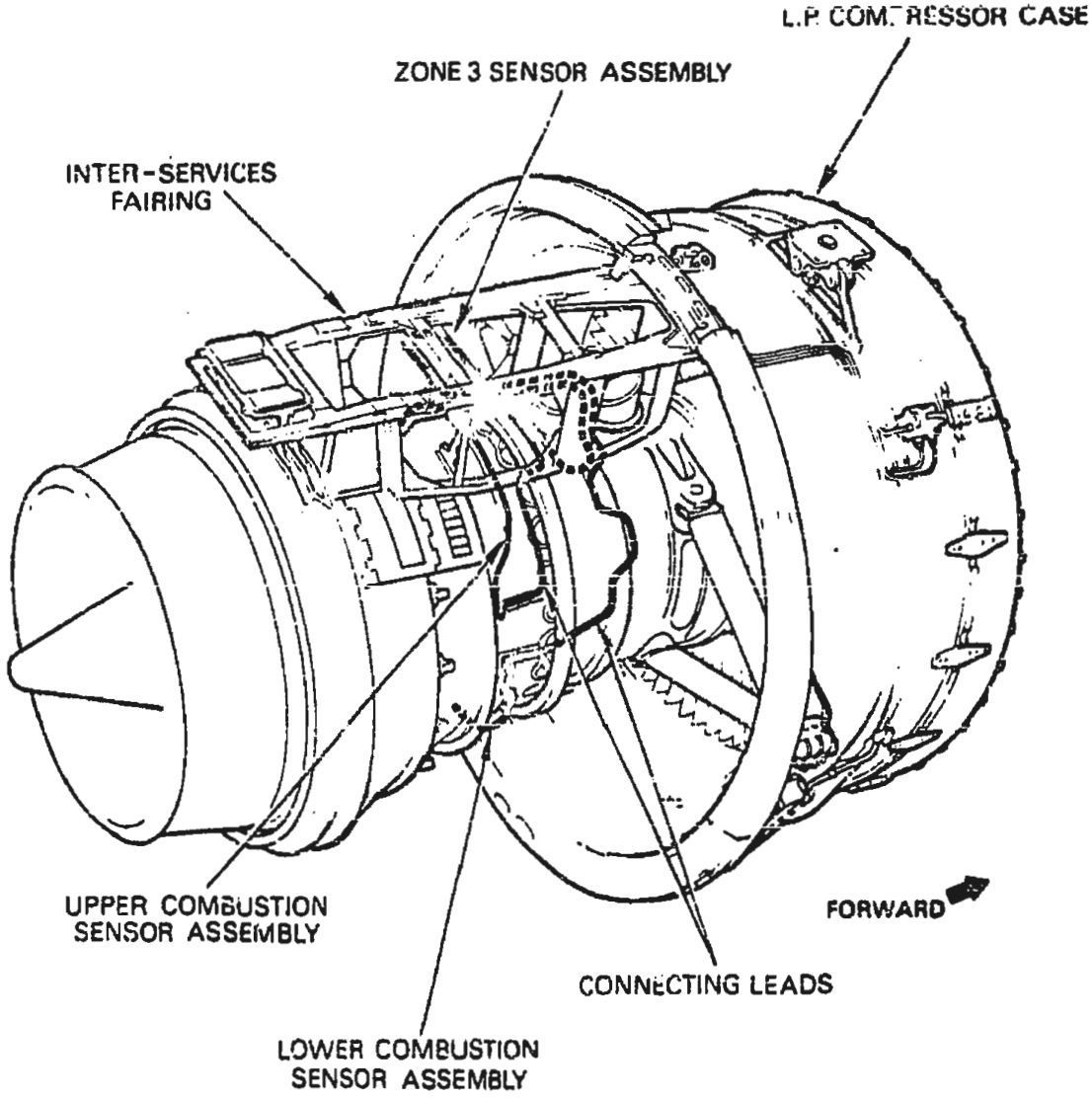
On the left-hand side of the engine, the upper and lower combustion sensor assemblies are connected by leads. On the right-hand side of the engine, the lower combustion sensor assembly is connected to the rear of the Zone 3 sensor assembly. From the forward end of the Zone 3 sensor assembly, connecting leads are routed through the interservices fairing and engine firewall to connect to the No. 1 sensor assembly at the engine front mount. Connecting leads from the upper combustion sensor assembly are routed to the intermediate disconnect, then through the interservices fairing and engine firewall and around the LP compressor case to connect to the No. 4 sensor assembly.

On engines incorporating RR SB72-3732, the connecting lead is routed from the horizontal firewall sensor assembly, situated at the engine front mount, down the left hand side of the LP compressor case, and along the lower 'A' frame strut, then up the left hand side of the combustion case entering the interservices fairing through a fume and fireseal and connecting to the front of the zone 3 sensor assembly, located on the interservices upper support structure.

From the rear of the zone 3 sensor assembly the connector lead is routed down and forward, through the fume and fireseal to the right hand side of the lower combustion case sensor assembly, which is connected by short leads to the upper combustion case sensor assembly on the left hand side of the combustion case.

From the right hand side of the upper combustion case sensor assembly, leads are routed up and over the combustion case and down the left hand side to return back along the lower 'A' frame strut to connect to the ejector sensor assembly, located on the lower right hand side of the engine firewall.

Each sensor element basically comprises two wire conductors surrounded by a ceramic like material (thermistor) and enclosed in a metal sheath. One wire conductor is connected to the element end fitting pin or socket and then, through the connecting leads, to the wire conductor of the adjacent sensor element in the same loop A or B. The other wire conductor is grounded through the end fittings, brackets,



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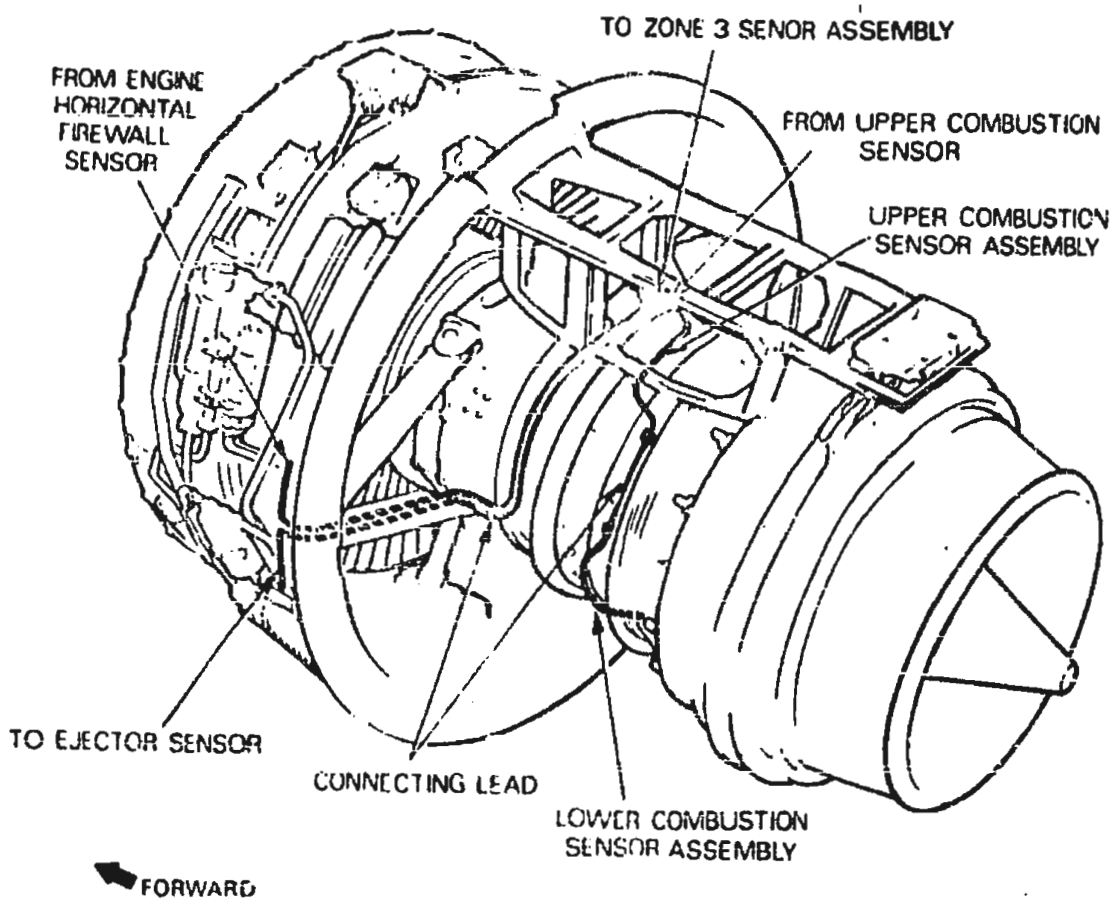
R Combustion and Zone 3 Fire Detector Sensor Assemblies
R Figure 6 (Sheet 1)

EFFECTIVITY: ENGINES WITH SB72-3732

001B



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Combustion and Zone 3 Fire Detector Sensor Assemblies
Figure 6 (Sheet 2)

and ground lead. The resistance value of the thermistor varies inversely proportional to temperature.

If an overheat or fire condition occurs, the temperature rise causes the resistance value of the thermistor to decrease. At a predetermined temperature for a given element length, the individual loop A or B provides an input to the fire detector control unit, and if coupled with an input from the parallel loop A or B, will actuate the fire alarm at the flight station, zone 210.

FIRE DETECTION SYSTEM - FAULT ISOLATION

1. General

R The diagrams and schematics in this section can be used for
R fault isolation any time a fault is reported or suspected. The
R PREREQUISITES listed at the top of each fault isolation diagram
R must be satisfied prior to starting fault isolation. Uncommon
R abbreviations are defined on the using fault code diagram or
R schematic.

R If the flight crew reports a trouble using a Fault Code number,
R the code number can be found in the Fault Isolation Reference
R Table in the Chapter 26 Fault Code Index. The index specifies
R the maintenance manual section, fault isolation diagram, and
R block number on the diagram where the fault isolation procedure
R should start. Schematics are included at the end of the section
R to supplement the fault code diagrams or as an aid in isolating
R a problem not covered on the diagrams.

R Refer to the Maintenance Manual Introduction for a more detailed
R discussion of the Fault Isolation Reporting Method (FIRM) and
R use of fault isolation diagrams/schematics.

CAUTION: A FIRE SIGNAL COULD BE INDUCED BY INADVERTENT MANIPULATION OF SYSTEM SWITCHES WHILE TROUBLE SHOOTING THE FIRE DETECTION SYSTEM ON THE GROUND WITH THE APU RUNNING. THE RESULT WOULD BE APU AUTO SHUTDOWN AND FIRE BOTTLE DISCHARGE.

If it is essential to have the APU operating while trouble shooting the APU fire warning system, it is advisable to open the APU FIRE SHUTDOWN circuit breaker (C18) on the CB1 circuit breaker panel.

2. Fault Isolation/Identification

Table 101 is a list of all fault isolation data in this section of the manual.

Fire Detection System Fault Isolation
Table 101

FIGURE	TITLE
101	Fire Protection Component Location Index
102	Fire Protection Component Locator

R Fire Detection System Fault Isolation (Cont)
R Table 101

FIGURE	TITLE
103	Engine Loop A or Loop B Light Remains On
104	Engine Fire Detection Test
105	APU Loop A or Loop B Light Remains On
106	APU Fire Detection Test
107	Wheel Well Loop A or Loop B Light Remains On
108	Wheel Well Fire Detection Test
SCHEM 1	Engine No. 1 Fire Detection System
SCHEM 2	Engine No. 2 Fire Detection System
SCHEM 3	Engine No. 3 Fire Detection System
SCHEM 4	APU Fire Detection System
SCHEM 5	MLG Wheel Well Fire Detection System

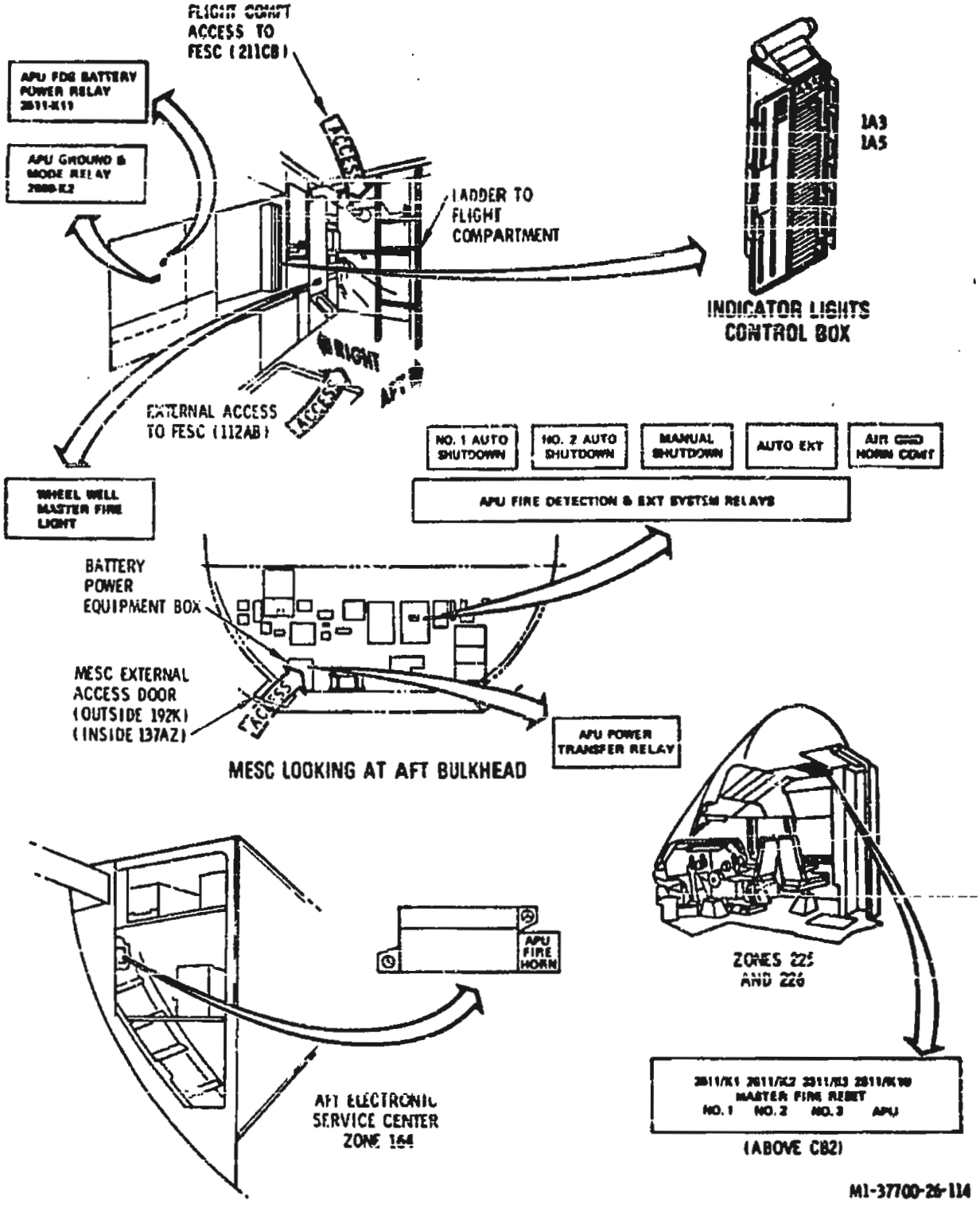
COMPONENT	QTY	AREA/ACCESS	REFERENCE
ALARM BELL – FIRE	1	FLT STA/UNDER FE/SO TABLE	26-11-09
CONTROL – APU FIRE EMERGENCY SHUTOFF	1	FLT STA/FE/SO P11	26-11-14
CONTROL – FIRE EMERGENCY ENG SHUTOFF	1	FLT STA/PILOT OVHD PNL/P5	26-11-13
LAMP – APU FIRE PULL HANDLE	2	FLT STA/FE/SO P11	20-33-01
LAMP – ENG FIRE DET LOOP	2	FLT STA/FE/SO P11	20-33-02
LAMP – ENG FIRE PULL HANDLE	3	FLT STA/PILOT OVHD PNL P5	20-33-01
LAMP – WHEEL WELL FIRE TEST	2	FLT STA/FE/SO P11	20-33-02
SENSOR - APU VENTILATION OUTLET ASSEMBLY	1	APU COMPARTMENT	26-11-23
SENSOR – APU COMBUSTION ZONE ASSEMBLY	1	APU COMPARTMENT	26-11-23
SENSOR – LOWER COMBUSTION ASSEMBLY	1	ENGINE COMPARTMENT	26-11-25
SENSOR – UPPER COMBUSTION FIRE DETECTOR ASSEMBLY	1	ENGINE COMPARTMENT	26-11-25
SENSOR – ZONE 3 FIRE DETECTOR ASSEMBLY	1	ENGINE COMPARTMENT	26-11-25
SENSOR – NO. 2 ENGINE VERTICAL FIREWALL ASSEMBLY	1	NO. 2 ENGINE COMPARTMENT	26-11-27
SENSOR – MLG WHEEL WELLS FWD ASSEMBLY	1	MLG WHEEL WELL	26-11-28
SENSOR – MLG WHEEL WELLS AFT ASSEMBLY	1	MLG WHEEL WELL	26-11-28
SENSOR – APU FORWARD FIREWALL	1	APU COMPARTMENT	26-11-07
SENSOR – ENGINE HORIZONTAL FIREWALL ASSEMBLY	1	ENGINE COMPARTMENT	26-11-03
SENSOR – ENGINE EJECTOR ASSEMBLY	1	ENGINE COMPARTMENT	26-11-02
SENSOR – ENGINE GEARCASE ASSEMBLY	1	ENGINE COMPARTMENT	26-11-01
CARD 1A3 – INDICATOR LIGHT CONTROL BOX	1	FESC/112AB	33-17-04
HORN – APU WARNING	1	AFTERBODY LEFT/317AB	26-11-10
RELAY – MASTER FIRE LIGHT RESET 2611-K1, K2, K3	3	FLT STA/210A	26-11-00
UNIT – FIRE DET CONTROL	5	FESC/112AB	26-11-08

M1-2001-26-670

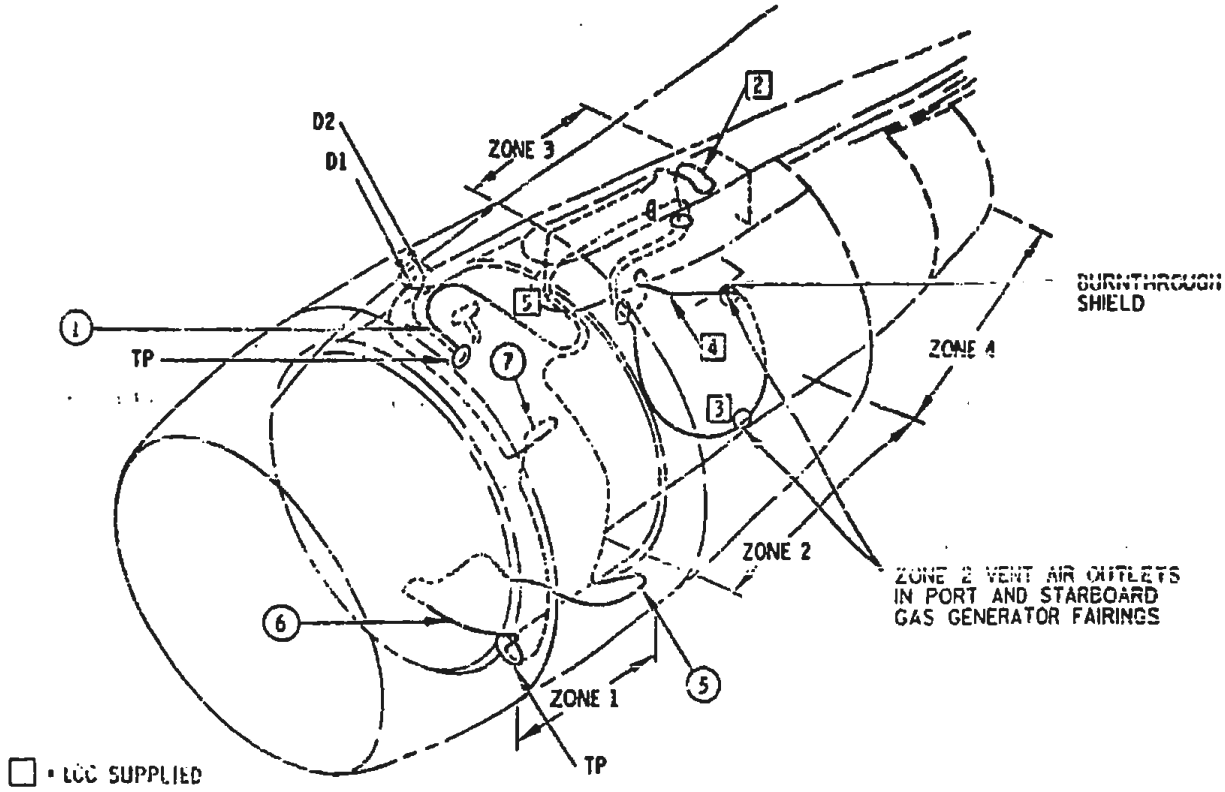
R Fire Protection Component Location Index
R Figure 101

EFFECTIVITY: ALL.

0018


FLIGHT COMPT ACCESS TO FESC (211CB)
APU FDR BATTERY POWER RELAY
APU GROUND & MODE RELAY
LADDER TO FLIGHT COMPARTMENT
1A3
1A5
INDICATOR LIGHTS CONTROL BOX
EXTERNAL ACCESS TO FESC (112AB)
NO. 1 AUTO SHUTDOWN
NO. 2 AUTO SHUTDOWN
MANUAL SHUTDOWN
AUTO EXT
APU FIRE DETECTION & EXT SYSTEM RELAYS
WHEEL WELL MASTER FIRE LIGHT
BATTERY POWER EQUIPMENT BOX
MESC EXTERNAL ACCESS DOOR (OUTSIDE 192K) (INSIDE 137AZ)
APU POWER TRANSFER RELAY
MESC LOOKING AT AFT BULKHEAD
APU FIRE HORN
ZONES 225 AND 226
MASTER FIRE RESET
NO. 1 NO. 2 NO. 3 APU
(ABOVE CB2)
AFT ELECTRONIC SERVICE CENTER ZONE 164
M1-37700-26-114

Fire Protection Component Locator
Figure 102 (Sheet 1)



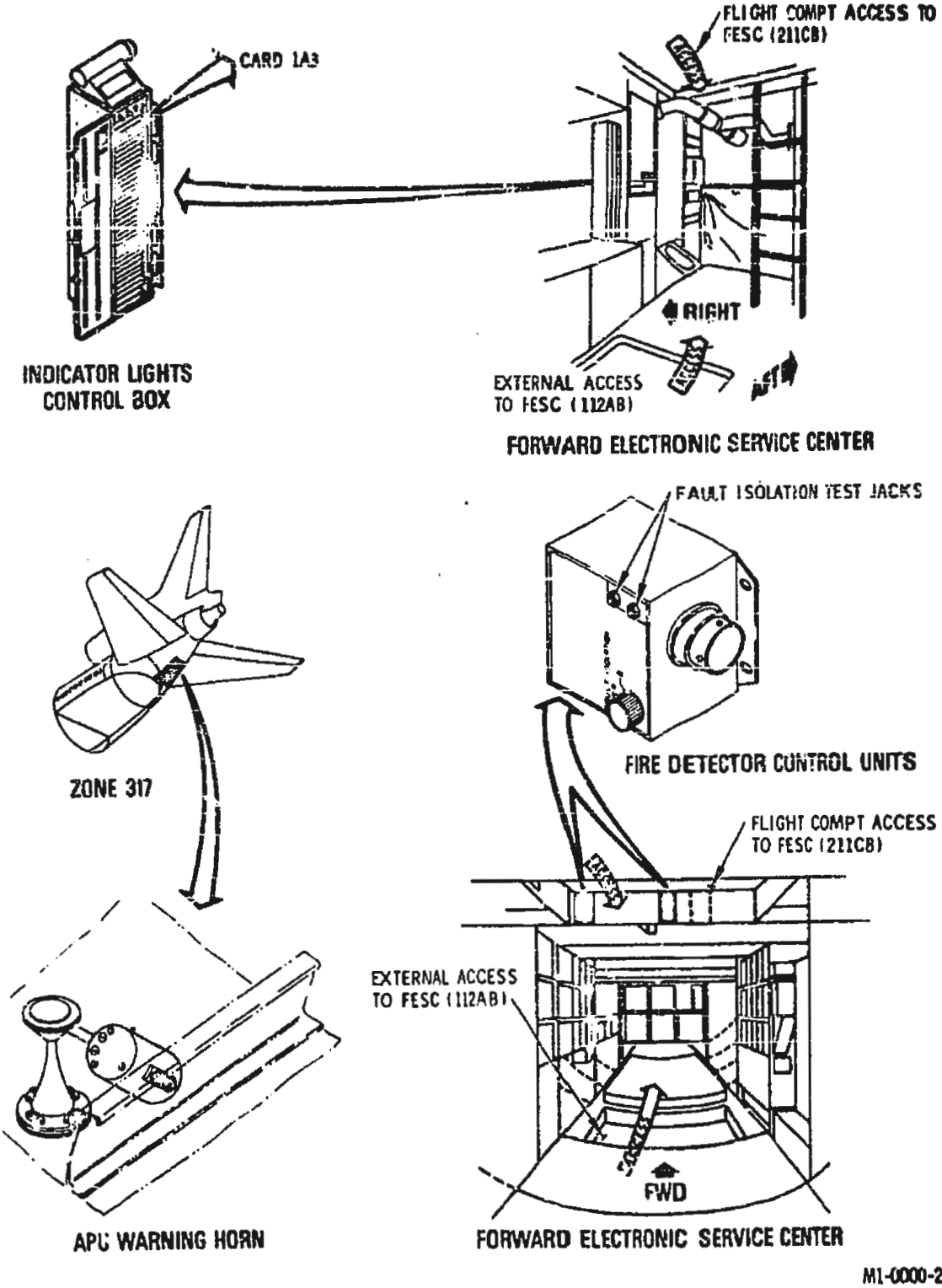
NOTE

1 TOTAL LOOP RESISTANCE IS APPROXIMATELY 50Ω FOR EACH WING ENGINE AND 63Ω FOR NO. 2 ENGINE (LOOP RESISTANCE IS 30Ω OR 43Ω RESPECTIVELY IF RESISTORS ARE REMOVED, SB71-5514).

SENSOR REF. NO.	LOCATION	MAXIMUM WIRE RESISTANCE AT ROOM TEMP. BETWEEN CENTER CONTACTS OF SENSING ELEMENT
1	ENG HORIZONTAL FIREWALL SENSOR ASSEMBLY	3.1 OHMS
2	ZONE 3 FIRE DETECTOR FIRE SENSOR ASSEMBLY	2.7 OHMS
3	LOWER COMBUSTION FIRE DETECTION SENSOR ASSEMBLY	5.1 OHMS
4	UPPER COMBUSTION FIRE DETECTION SENSOR ASSEMBLY	4.8 OHMS
5	ENGINE-EJECTOR SENSOR ASSEMBLY	6.9 OHMS
6	ENGINE GEARCASE SENSOR ASSEMBLY (RUNNING RADIALLY)	4.1 OHMS
7	ENGINE GEARCASE SENSOR ASSEMBLY (RUNNING FORE/AFT)	1.8 OHMS
	NO. 2 ENG VERTICAL FIREWALL FIRE SENSOR ASSEMBLY	13.3 OHMS

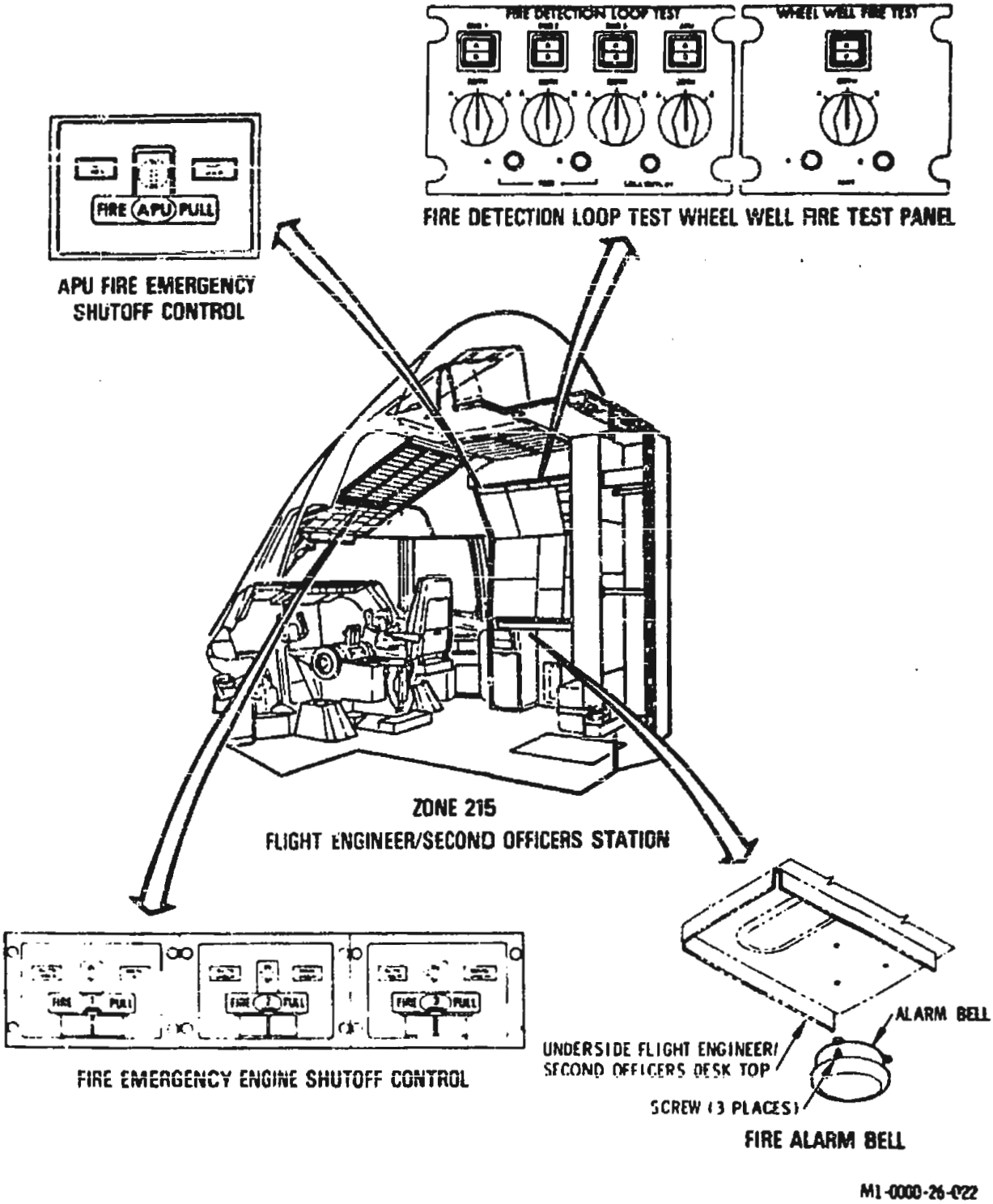
MI-0000-26-1279

R Fire Protection Component Locator
R Figure 102 (Sheet 2)

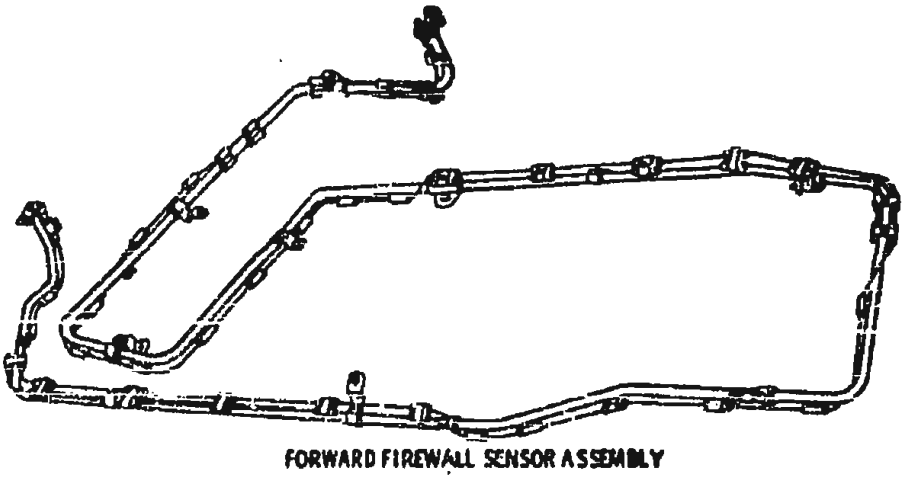


M1-0000-26-562

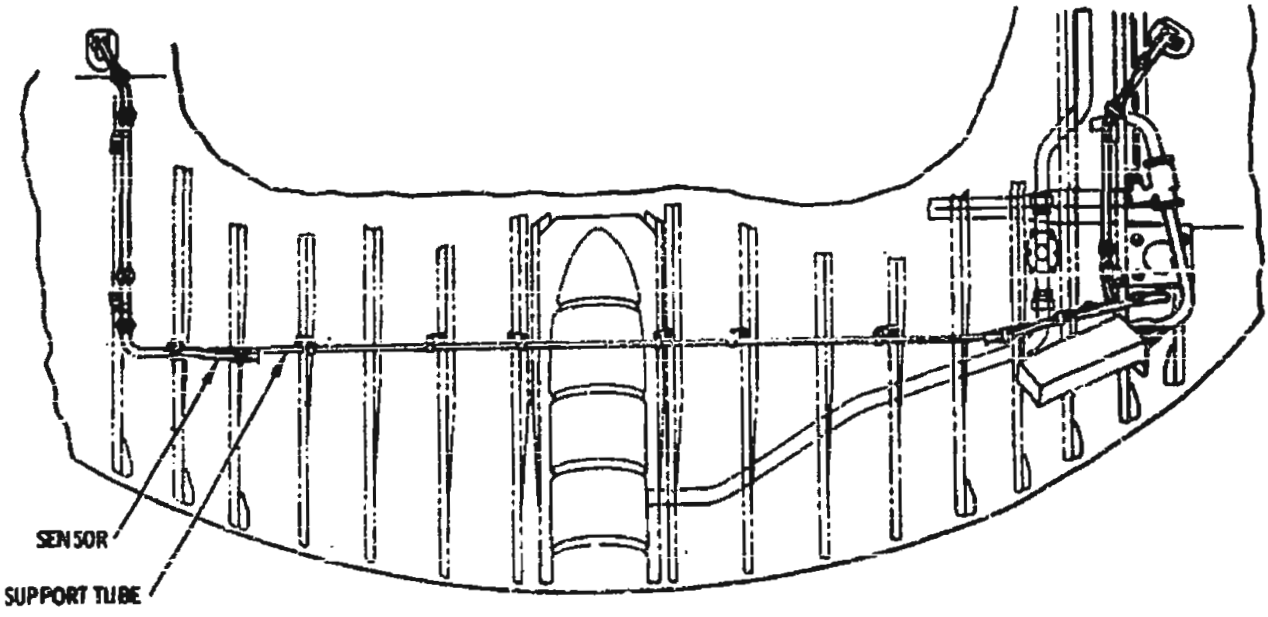
Fire Protection Component Locator
Figure 102 (Sheet 3)


FIRE DETECTION LOOP TEST
WHEEL WELL FIRE TEST
FIRE DETECTION LOOP TEST WHEEL WELL FIRE TEST PANEL
FIRE APU PULL
APU FIRE EMERGENCY SHUTOFF CONTROL
ZONE 215
FLIGHT ENGINEER/SECOND OFFICERS STATION
FIRE EMERGENCY ENGINE SHUTOFF CONTROL
ALARM BELL
UNDERSIDE FLIGHT ENGINEER/ SECOND OFFICERS DESK TOP
SCREW (3 PLACES)
FIRE ALARM BELL
M1-0000-26-022

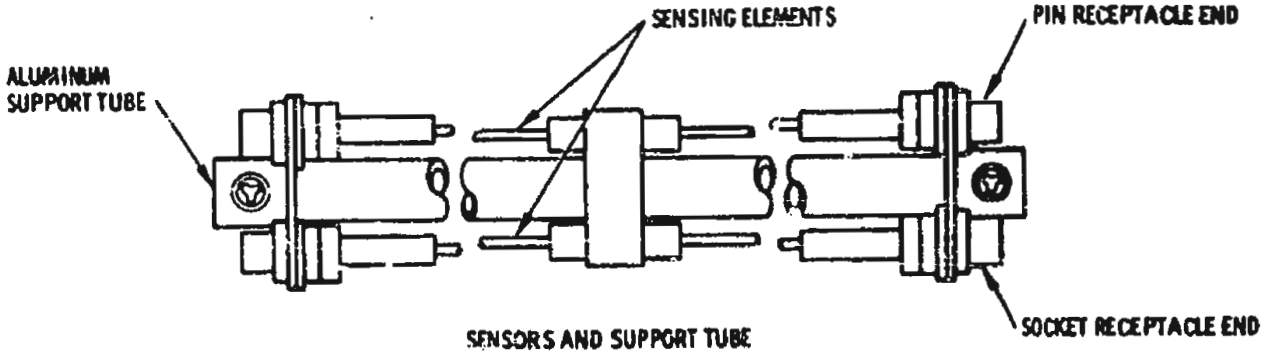
Fire Protection Component Locator
Figure 102 (Sheet 4)



R Fire Protection Component Locator
R Figure 102 (Sheet 5)



AFT FACE CANTED BULKHEAD FIREWALL



SENSORS AND SUPPORT TUBE

NO. 2 ENGINE VERTICAL FIREWALL SENSOR ASSEMBLY

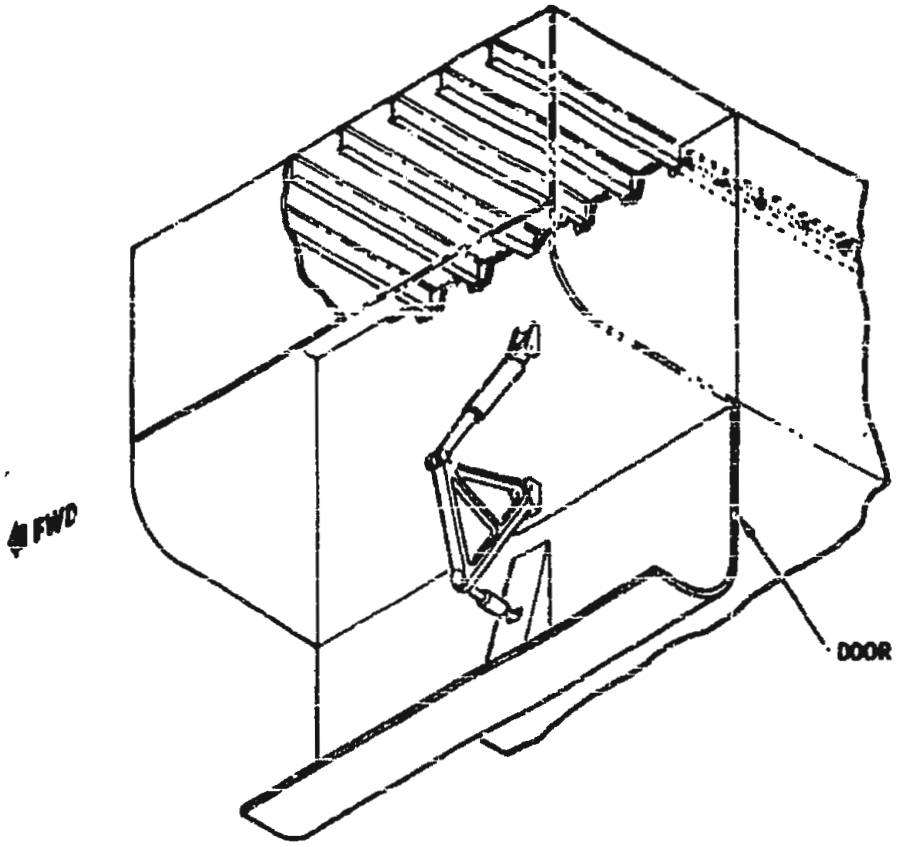
M1-0000-26-1026

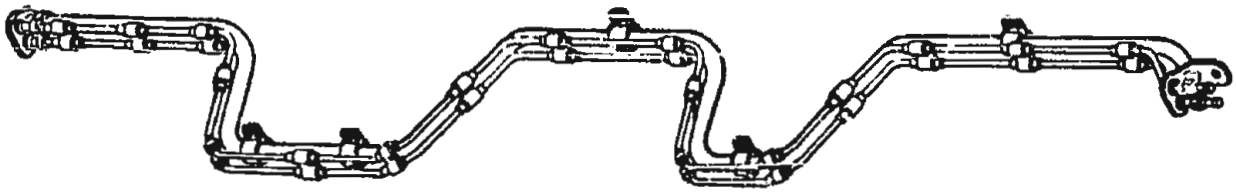
R
R

Fire Protection Component Locator
Figure 102 (Sheet 6)

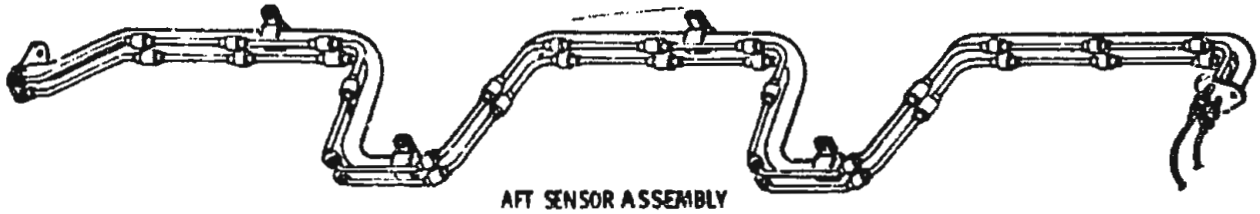
EFFECTIVITY: ALL

0018





FORWARD SENSOR ASSEMBLY



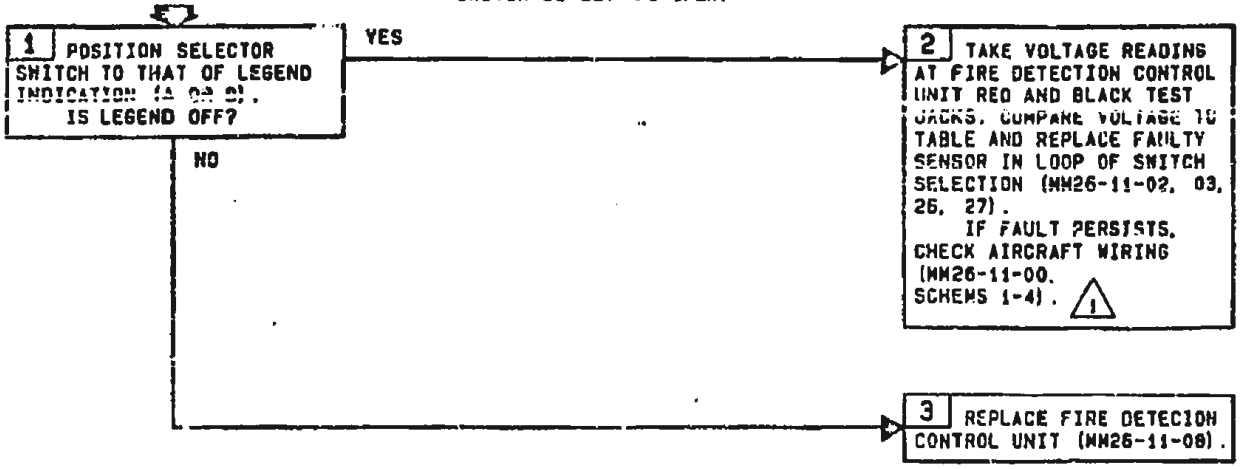
AFT SENSOR ASSEMBLY

MLG WHEEL WELLS FORWARD AND AFT SENSOR ASSEMBLIES M1-0000-26-1025

R Fire Protection Component Locator
R Figure 102 (Sheet 7)

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
BITE TEST (MM26-11-00, 501)
CLOSE CB'S: -J1, J2 OR J3 -K1, K2, OR K3
-J5 -K5, K6, OR K7
-J6 -L9
ON ENG 1, 2, AND 3 FIRE DETECTOR CONTROL UNIT, ENSURE THAT A-OPER-B SWITCH IS SET TO OPER.

ENGINE LOOP A OR B ANNUN LEGEND REMAINS ON


1 POSITION SELECTOR SWITCH TO THAT OF LEGEND INDICATION (A OR B). IS LEGEND OFF?
YES
NO
2 TAKE VOLTAGE READINGS AT FIRE DETECTION CONTROL UNIT RED AND BLACK TEST JACKS. COMPARE VOLTAGE TO TABLE AND REPLACE FAULTY SENSOR IN LOOP OF SWITCH SELECTION (MM26-11-02, 03, 26, 27). IF FAULT PERSISTS, CHECK AIRCRAFT WIRING (MM26-11-00, SCHEMS 1-4). 1
3 REPLACE FIRE DETECION CONTROL UNIT (MM26-11-08).

VOLTAGE READING		FAULTY SENSOR	TA NO.
ENG 1 AND 3	ENG 2		
+0.49 TO +0.44	+0.68 TO +0.63	AIRCRAFT WIRING	-
-	+0.63 TO +0.23	NO. 2 ENGINE VERTICAL FIREWALL FIRE SENSOR ASSEMBLY	MM26-11-27
+0.44 TO +0.34	+0.23 TO +0.14	ENGINE HORIZONTAL FIREWALL SENSOR ASSEMBLY	MM26-11-03
+0.34 TO +0.26	+0.14 TO +0.05	ZONE 3 FIRE DETECTOR SENSOR ASSEMBLY	MM26-11-26
+0.26 TO +0.10	+0.05 TO -0.10	LOWER COMBUSTION FIRE DETECTOR SENSOR ASSEMBLY	MM26-11-26
+0.10 TO -0.044	-0.10 TO -0.24	UPPER COMBUSTION FIRE DETECTOR SENSOR ASSEMBLY	MM26-11-26
-0.044 TO -0.26	-0.24 TO -0.45	ENGINE EJECTOR SENSOR ASSEMBLY	MM26-11-02
-0.26 TO -0.38	-0.45 TO -0.57	ENGINE GEARCASE SENSOR ASSEMBLY (RUNNING RADIALLY)	MM26-11-01
-0.38 TO -0.44	-0.57 TO -0.63	ENGINE GEARCASE SENSOR ASSEMBLY (RUNNING FORE & AFT)	MM26-11-01
-0.44 TO -0.49	-0.63 TO -0.6	AIRCRAFT WIRING	-

2

NOTE

1 INTERMITTENT FIRE DETECTION LOOP FAULT IS INDICATIVE OF A PARTIALLY DAMAGED LOOP.
A VISUALLY CHECK EXPOSED LOOP FOR DAMAGE (CHAFING, CRUSHED, DENTED ETC.). REPLACE LOOP (REF. REMOVAL AND INSTALLATION PROCEDURE OF APPLICABLE SENSOR ASSEMBLY).
B IF FAULT PERSISTS, CHECK RESISTANCE TO GROUND FOR FAULTED LOOP SEGMENTS. REPLACE LOOP (REF. REMOVAL AND INSTALLATION PROCEDURE OF APPLICABLE SENSOR ASSEMBLY).
C IF FAULT PERSISTS, EXCHANGE FIRE DETECTOR CONTROL UNIT AND MONITOR NEXT FLIGHT TO ISOLATE A POSSIBLE INTERMITTENT FAULT IN THE FIRE DETECTOR CONTROL UNIT.

2 READ NEGATIVE VOLTAGE BY REVERSING LEADS ON VOM. READING IS AUTOMATIC IF USING DIGITAL METER.

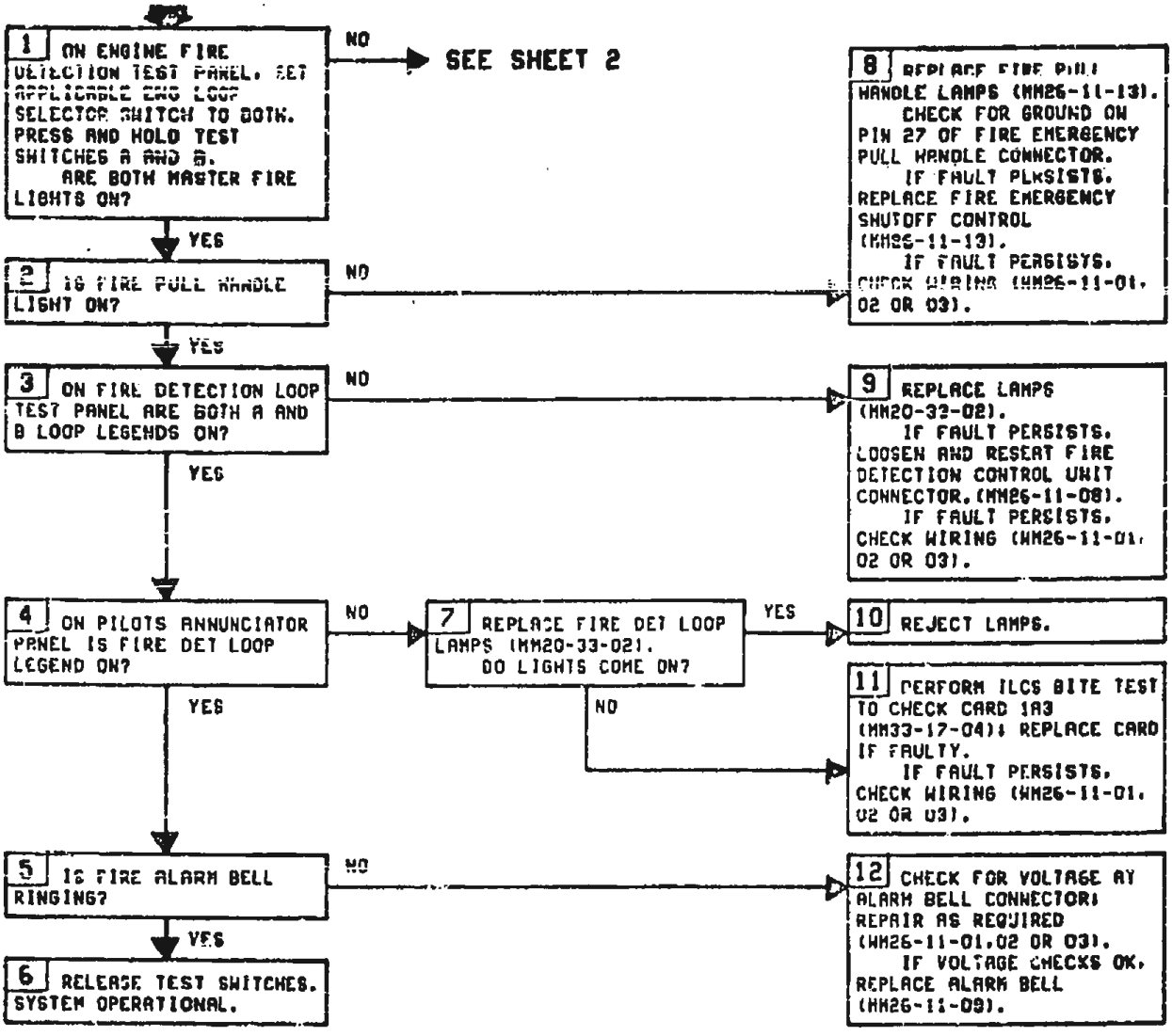
M1-0000-26-1260

R Engine Loop A or B Light Remains On
R Figure 103

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CLOSE CB'S: CB1-J1,J2, OR J3
-J5
-J8
-K1,K2, OR K3
-K5,K6, OR K7
-L8

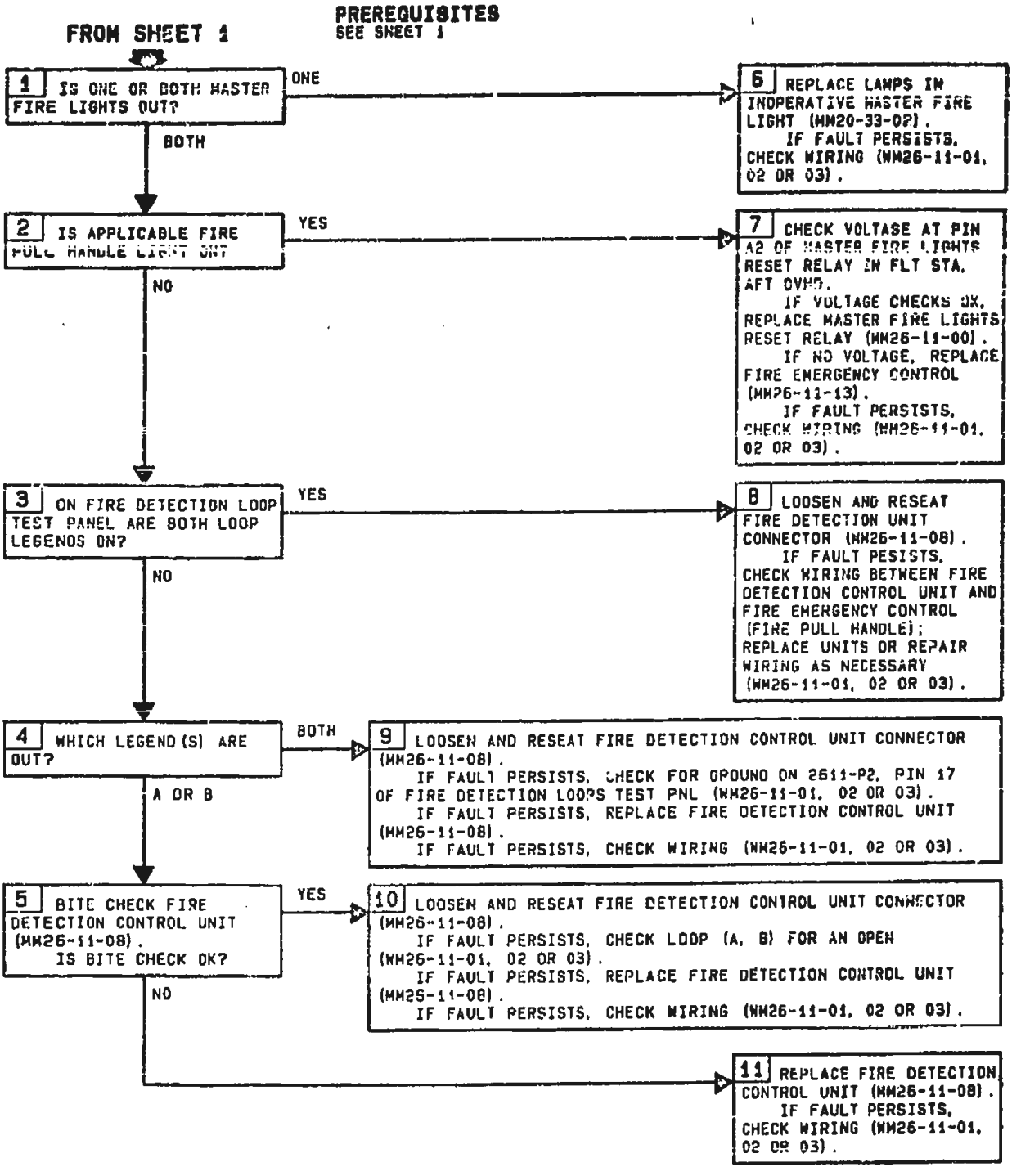
NOTE
OPEN CIRCUIT BREAKERS LISTED ABOVE FOR ENGINE SYSTEMS NOT BEING TESTED.

ENGINE FIRE DETECTION TEST


1 ON ENGINE FIRE DETECTION TEST PANEL, SET APPLICABLE ENG LOOP SELECTOR SWITCH TO BOTH. PRESS AND HOLD TEST SWITCHES A AND B. ARE BOTH MASTER FIRE LIGHTS ON?
NO
SEE SHEET 2
YES
2 IS FIRE PULL HANDLE LIGHT ON?
NO
8 REPLACE FIRE PULL HANDLE LAMPS (MM26-11-13). CHECK FOR GROUND ON PIN 27 OF FIRE EMERGENCY PULL HANDLE CONNECTOR. IF FAULT PERSISTS, REPLACE FIRE EMERGENCY SHUTOFF CONTROL (MM26-11-13). IF FAULT PERSISTS, CHECK WIRING (MM26-11-01, 02 OR 03).
YES
3 ON FIRE DETECTION LOOP TEST PANEL ARE BOTH A AND B LOOP LEGENDS ON?
NO
9 REPLACE LAMPS (MM20-32-02). IF FAULT PERSISTS, LOOSEN AND RESEAT FIRE DETECTION CONTROL UNIT CONNECTOR. (MM26-11-08). IF FAULT PERSISTS, CHECK WIRING (MM26-11-01, 02 OR 03).
YES
4 ON PILOTS ANNUNCIATOR PANEL IS FIRE DET LOOP LEGEND ON?
NO
7 REPLACE FIRE DET LOOP LAMPS (MM20-33-02). DO LIGHTS COME ON?
YES
10 REJECT LAMPS.
NO
11 PERFORM ILCS BITE TEST TO CHECK CARD 1A3 (MM33-17-04); REPLACE CARD IF FAULTY. IF FAULT PERSISTS, CHECK WIRING (MM26-11-01, 02 OR 03).
YES
5 IS FIRE ALARM BELL RINGING?
NO
12 CHECK FOR VOLTAGE AT ALARM BELL CONNECTOR; REPAIR AS REQUIRED (MM26-11-01,02 OR 03). IF VOLTAGE CHECKS OK, REPLACE ALARM BELL (MM26-11-09).
YES
6 RELEASE TEST SWITCHES. SYSTEM OPERATIONAL.

M1-0005-26-505

Engine Fire Detection Test
Figure 104 (Sheet 1)


PREREQUISITES
SEE SHEET 1
FROM SHEET 1
1 IS ONE OR BOTH MASTER FIRE LIGHTS OUT?
ONE
BOTH
6 REPLACE LAMPS IN INOPERATIVE MASTER FIRE LIGHT (MM20-33-02).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-01, 02 OR 03).
2 IS APPLICABLE FIRE PULL HANDLE LIGHT ON?
YES
NO
7 CHECK VOLTAGE AT PIN A2 OF MASTER FIRE LIGHTS RESET RELAY IN FLT STA, AFT OVHD.
IF VOLTAGE CHECKS OK, REPLACE MASTER FIRE LIGHTS RESET RELAY (MM26-11-00).
IF NO VOLTAGE, REPLACE FIRE EMERGENCY CONTROL (MM26-11-13).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-01, 02 OR 03).
3 ON FIRE DETECTION LOOP TEST PANEL ARE BOTH LOOP LEGENDS ON?
YES
NO
8 LOOSEN AND RESEAT FIRE DETECTION UNIT CONNECTOR (MM26-11-08).
IF FAULT PESISTS, CHECK WIRING BETWEEN FIRE DETECTION CONTROL UNIT AND FIRE EMERGENCY CONTROL (FIRE PULL HANDLE); REPLACE UNITS OR REPAIR WIRING AS NECESSARY (MM26-11-01, 02 OR 03).
4 WHICH LEGEND(S) ARE OUT?
BOTH
A OR B
9 LOOSEN AND RESEAT FIRE DETECTION CONTROL UNIT CONNECTOR (MM26-11-08).
IF FAULT PERSISTS, CHECK FOR GROUND ON 2611-P2, PIN 17 OF FIRE DETECTION LOOPS TEST PNL (MM26-11-01, 02 OR 03).
IF FAULT PERSISTS, REPLACE FIRE DETECTION CONTROL UNIT (MM26-11-08).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-01, 02 OR 03).
5 BITE CHECK FIRE DETECTION CONTROL UNIT (MM26-11-08).
IS BITE CHECK OK?
YES
NO
10 LOOSEN AND RESEAT FIRE DETECTION CONTROL UNIT CONNECTOR (MM26-11-08).
IF FAULT PERSISTS, CHECK LOOP (A, B) FOR AN OPEN (MM26-11-01, 02 OR 03).
IF FAULT PERSISTS, REPLACE FIRE DETECTION CONTROL UNIT (MM26-11-08).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-01, 02 OR 03).
11 REPLACE FIRE DETECTION CONTROL UNIT (MM26-11-08).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-01, 02 OR 03).

M1-0003-26-109

Engine Fire Detection Test
Figure 104 (Sheet 2)

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
SYSTEM BITE TEST (MM26-11-00, 501)
CLOSE CB'S: CB1-D16 ALARM LOOP A
-D17 ALARM LOOP B
-D18 MASTER ALARM PWR
-J4 WHEEL WELL-APU
-J5 TEST
-J6 FIRE BELL PWR
-K4 LOOP A ALARM APU
-K8 LOOP B ALARM APU
CB3-S6 FIRE HORN
OPEN CB'S: CB1-C16 APU MAIN
-C17 APU ALTN
ON APU FIRE DETECTOR CONTROL UNIT, ENSURE THAT A-OPER-B SWITCH IS SET TO OPER.

CAUTION

VERIFY THAT APU MAIN AND ALTN CIRCUIT BREAKERS (CB1-C16 AND C17) ARE OPEN

APU LOOP A OR B ANNUN LEGEND REMAINS ON ⚠1

1 POSITION SELECTOR SWITCH TO THAT OF LEGEND INDICATION (A OR B). IS LEGEND OFF?

YES → 2 TAKE VOLTAGE READING AT FIRE DETECTION CONTROL UNIT RED AND BLACK TEST JACKS. COMPARE VOLTAGE TO TABLE AND REPLACE FAULTY SENSOR OR HARNESS IN LOOP OF SWITCH SELECTION (MM26-11-02, 03, 26, 27). IF FAULT PERSISTS, CHECK AIRCRAFT WIRING (MM26-11-05).

NO → 3 REPLACE FIRE DETECTION CONTROL UNIT (MM26-11-08).

VOLTAGE READING	FAULTY COMPONENT	ATA NO.
+0.38 TO +0.25	AIRCRAFT WIRING	
+0.31 TO -0.03	FWD FIREWALL SENSOR (672036-193)	MM26-11-07
-0.04 TO -0.02	HARNESS ASSEMBLY (672036-197)	
-0.03 TO -0.06	VENTILATION OUTLET SENSOR (672036-129)	MM26-11-23
-0.05 TO -0.06	HARNESS ASSEMBLY (672036-199)	
-0.05 TO -0.09	VENTILATION OUTLET SENSOR (672036-129)	MM26-11-23
-0.07 TO -0.10	HARNESS ASSEMBLY (672036-185 OR -187)	
-0.08 TO -0.31	COMBUSTION ZONE SENSOR (672036-191)	MM26-11-06
-0.25 TO -0.38	AIRCRAFT WIRING	

⚠2

NOTE

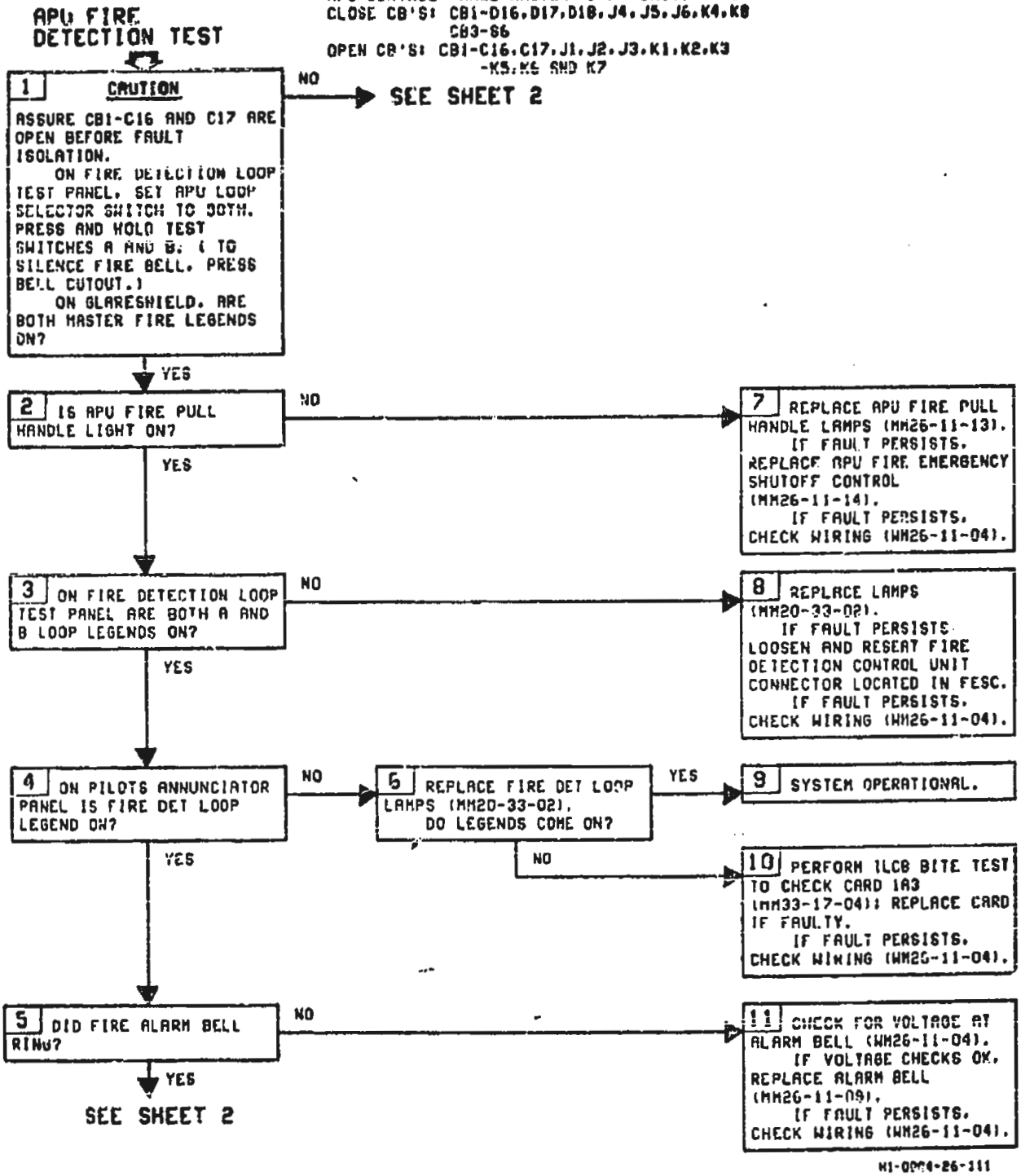
⚠1 INTERMITTENT FIRE DETECTION LOOP FAULT IS INDICATIVE OF A PARTIALLY DAMAGED LOOP.
A VISUALLY CHECK EXPOSED LOOP FOR DAMAGE (CHAFING, CRUSHED, DENTED ETC.). REPLACE LOOP (REF. REMOVAL AND INSTALLATION PROCEDURE OF APPLICABLE SENSOR ASSEMBLY).
B IF FAULT PERSISTS, CHECK RESISTANCE TO GROUND FOR FAULTED LOOP SEGMENTS. REPLACE LOOP (REF. REMOVAL AND INSTALLATION PRODEDURE OF APPLICABLE SENSOR ASSEMBLY).
C IF FAULT PERSISTS, EXCHANGE FIRE DETECTOR CONTROL UNIT AND MONITOR NEXT FLIGHT TO ISOLATE A POSSIBLE INTERMITTENT FAULT IN THE FIRE DETECTOR CONTROL UNIT.

⚠2 READ NEGATIVE VOLTAGE BY REVERSING LEADS ON VOM. READING IS AUTOMATIC IF USING DIGITAL METER.

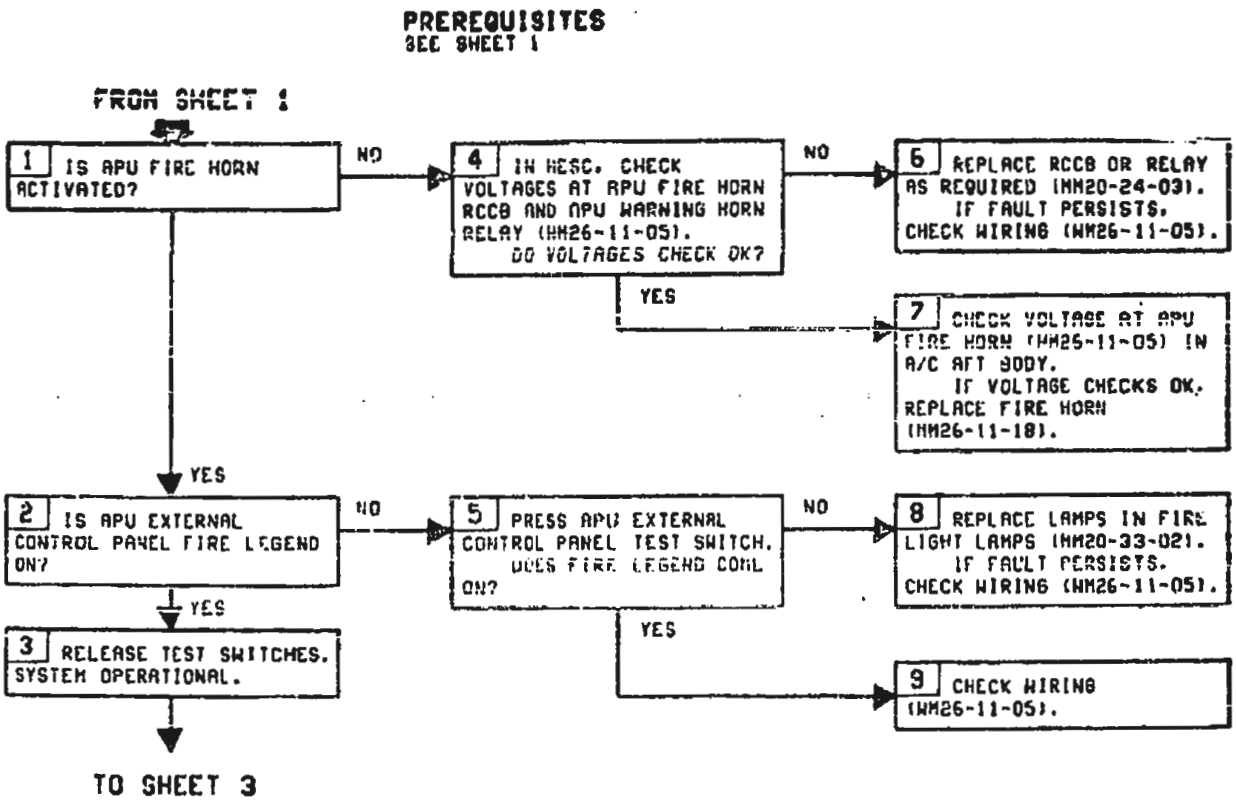
MI-0005-26-507

APU Loop A or B Light Remains On
Figure 105

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
APU CONTROL PANEL MASTER POWER SWITCH - OFF
CLOSE CB'S: CB1-D16,D17,D18,J4,J5,J6,K4,K8
CB3-S6
OPEN CB'S: CB1-C16,C17,J1,J2,J3,K1,K2,K3
-K5,K6 AND K7

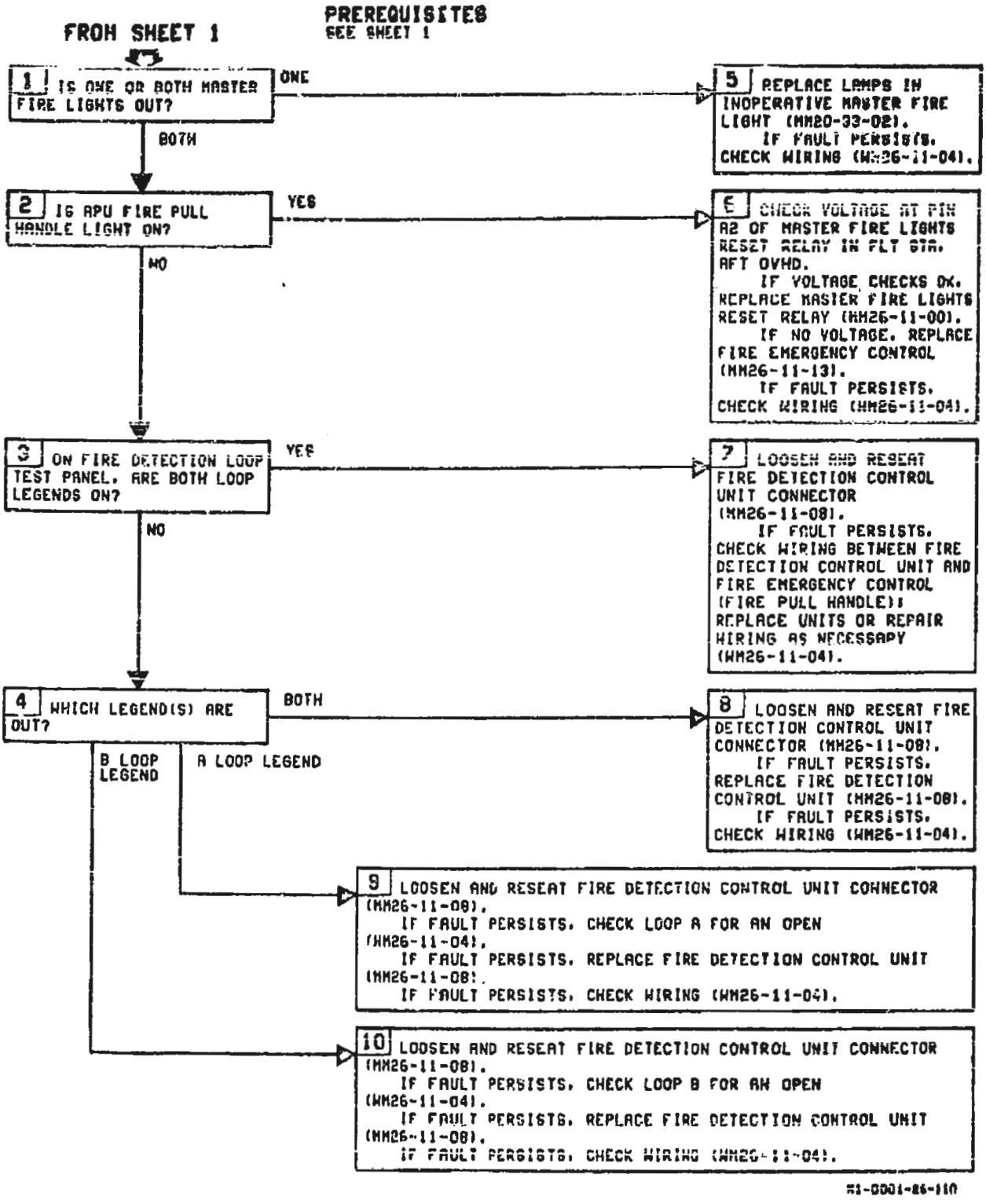

APU FIRE DETECTION TEST
1 CAUTION
ASSURE CB1-C16 AND C17 ARE OPEN BEFORE FAULT ISOLATION.
ON FIRE DETECTION LOOP TEST PANEL, SET APU LOOP SELECTOR SWITCH TO BOTH. PRESS AND HOLD TEST SWITCHES A AND B. (TO SILENCE FIRE BELL, PRESS BELL CUTOUT.)
ON GLARESHIELD, ARE BOTH MASTER FIRE LEGENDS ON?
NO
SEE SHEET 2
YES
2 IS APU FIRE PULL HANDLE LIGHT ON?
NO
7 REPLACE APU FIRE PULL HANDLE LAMPS (MM26-11-13).
IF FAULT PERSISTS, REPLACE APU FIRE EMERGENCY SHUTOFF CONTROL (MM26-11-14).
IF FAULT PERSISTS, CHECK WIRING (WM26-11-04).
YES
3 ON FIRE DETECTION LOOP TEST PANEL ARE BOTH A AND B LOOP LEGENDS ON?
NO
8 REPLACE LAMPS (MM20-33-02).
IF FAULT PERSISTS LOOSEN AND RESEAT FIRE DETECTION CONTROL UNIT CONNECTOR LOCATED IN FESC.
IF FAULT PERSISTS, CHECK WIRING (WM26-11-04).
YES
4 ON PILOTS ANNUNCIATOR PANEL IS FIRE DET LOOP LEGEND ON?
NO
6 REPLACE FIRE DET LOOP LAMPS (MM20-33-02), DO LEGENDS COME ON?
YES
9 SYSTEM OPERATIONAL.
NO
10 PERFORM ILCB BITE TEST TO CHECK CARD 1A3 (MM33-17-04); REPLACE CARD IF FAULTY.
IF FAULT PERSISTS, CHECK WIRING (WM26-11-04).
YES
5 DID FIRE ALARM BELL RING?
NO
11 CHECK FOR VOLTAGE AT ALARM BELL (WM26-11-04).
IF VOLTAGE CHECKS OK, REPLACE ALARM BELL (MM26-11-09).
IF FAULT PERSISTS, CHECK WIRING (WM26-11-04).
YES
SEE SHEET 2
M1-0004-26-111

APU Fire Detection Test
Figure 106 (Sheet 1)


PREREQUISITES
SEE SHEET 1
FROM SHEET 1
1 IS APU FIRE HORN ACTIVATED?
NO
4 IN MESC, CHECK VOLTAGES AT APU FIRE HORN RCCB AND APU WARNING HORN RELAY (MM26-11-05). DO VOLTAGES CHECK OK?
NO
6 REPLACE RCCB OR RELAY AS REQUIRED (MM20-24-03). IF FAULT PERSISTS, CHECK WIRING (MM26-11-05).
YES
7 CHECK VOLTAGE AT APU FIRE HORN (MM26-11-05) IN A/C AFT BODY. IF VOLTAGE CHECKS OK, REPLACE FIRE HORN (MM26-11-18).
YES
2 IS APU EXTERNAL CONTROL PANEL FIRE LEGEND ON?
NO
5 PRESS APU EXTERNAL CONTROL PANEL TEST SWITCH. DOES FIRE LEGEND COME ON?
NO
8 REPLACE LAMPS IN FIRE LIGHT LAMPS (MM20-33-021). IF FAULT PERSISTS, CHECK WIRING (MM26-11-05).
YES
3 RELEASE TEST SWITCHES. SYSTEM OPERATIONAL.
YES
9 CHECK WIRING (MM26-11-05).
TO SHEET 3

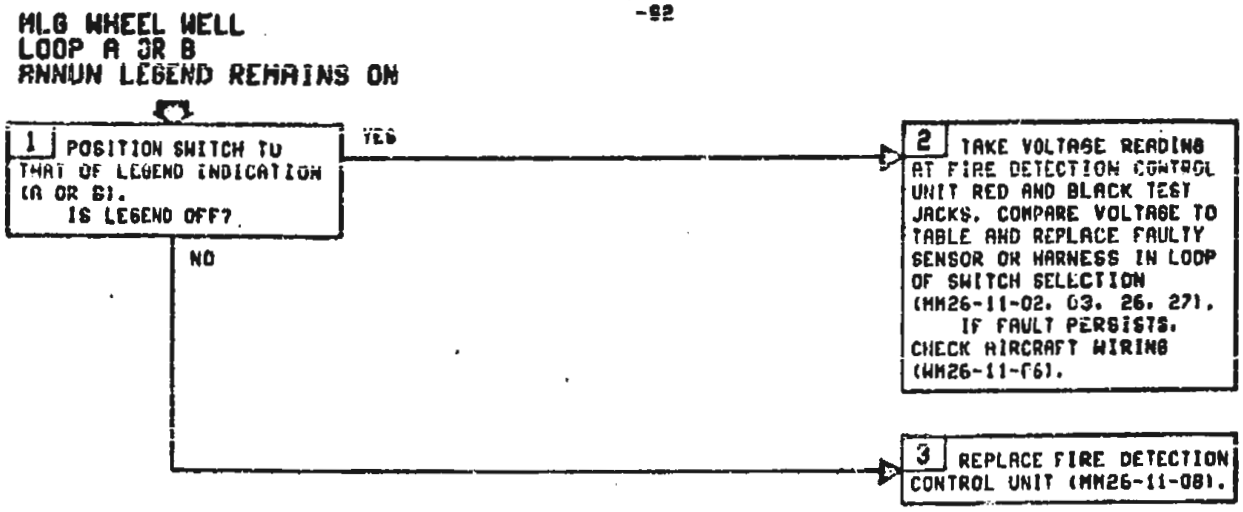
41-0000-26-1062

APU Fire Detection Test
Figure 106 (Sheet 2)


PREREQUISITES
SEE SHEET 1
FROM SHEET 1
1 IS ONE OR BOTH MASTER FIRE LIGHTS OUT?
ONE
BOTH
5 REPLACE LAMPS IN INOPERATIVE MASTER FIRE LIGHT (MM20-33-02).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-04).
2 IS APU FIRE PULL HANDLE LIGHT ON?
YES
NO
6 CHECK VOLTAGE AT PIN A2 OF MASTER FIRE LIGHTS RESET RELAY IN FLT STA, AFT OVHD.
IF VOLTAGE CHECKS OK, REPLACE MASTER FIRE LIGHTS RESET RELAY (MM26-11-00).
IF NO VOLTAGE, REPLACE FIRE EMERGENCY CONTROL (MM26-11-13).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-04).
3 ON FIRE DETECTION LOOP TEST PANEL, ARE BOTH LOOP LEGENDS ON?
YES
NO
7 LOOSEN AND RESEAT FIRE DETECTION CONTROL UNIT CONNECTOR (MM26-11-08).
IF FAULT PERSISTS, CHECK WIRING BETWEEN FIRE DETECTION CONTROL UNIT AND FIRE EMERGENCY CONTROL (FIRE PULL HANDLE); REPLACE UNITS OR REPAIR WIRING AS NECESSARY (MM26-11-04).
4 WHICH LEGEND(S) ARE OUT?
BOTH
B LOOP LEGEND
A LOOP LEGEND
8 LOOSEN AND RESEAT FIRE DETECTION CONTROL UNIT CONNECTOR (MM26-11-08).
IF FAULT PERSISTS, REPLACE FIRE DETECTION CONTROL UNIT (MM26-11-08).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-04).
9 LOOSEN AND RESEAT FIRE DETECTION CONTROL UNIT CONNECTOR (MM26-11-08).
IF FAULT PERSISTS, CHECK LOOP A FOR AN OPEN (MM26-11-04).
IF FAULT PERSISTS, REPLACE FIRE DETECTION CONTROL UNIT (MM26-11-08).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-04).
10 LOOSEN AND RESEAT FIRE DETECTION CONTROL UNIT CONNECTOR (MM26-11-08).
IF FAULT PERSISTS, CHECK LOOP B FOR AN OPEN (MM26-11-04).
IF FAULT PERSISTS, REPLACE FIRE DETECTION CONTROL UNIT (MM26-11-08).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-04).

APU Fire Detection Test
Figure 106 (Sheet 3)

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CLOSE CB'S: CB1-J4
-J5
-J6
-J8
CB3-B1
-B2


MLG WHEEL WELL
LOOP A OR B
ANNUN LEGEND REMAINS ON
1 POSITION SWITCH TO THAT OF LEGEND INDICATION (A OR B). IS LEGEND OFF?
YES
NO
2 TAKE VOLTAGE READING AT FIRE DETECTION CONTROL UNIT RED AND BLACK TEST JACKS. COMPARE VOLTAGE TO TABLE AND REPLACE FAULTY SENSOR OR HARNESS IN LOOP OF SWITCH SELECTION (MM26-11-02, 03, 26, 27). IF FAULT PERSISTS, CHECK AIRCRAFT WIRING (MM26-11-06).
3 REPLACE FIRE DETECTION CONTROL UNIT (MM26-11-08).

VOLTAGE READING	FAULTY COMPONENT	ATA NO.
+0.36 TO +0.24	AIRCRAFT WIRING	
+0.30 TO +0.13	FWD WHEEL WELL SENSOR (672036-165)	MM26-11-28
+0.16 TO +0.00	AFT WHEEL WELL SENSOR (672036-167)	MM26-11-29
+0.01 TO -0.01	HARNESS ASSEMBLY (672036-209 OR -207)	
-0.00 TO -0.16	AFT WHEEL WELL SENSOR (672036-167)	MM26-11-29
-0.13 TO -0.30	FWD WHEEL WELL SENSOR (672036-165)	MM26-11-28
-0.24 TO -0.36	AIRCRAFT WIRING	

(1)

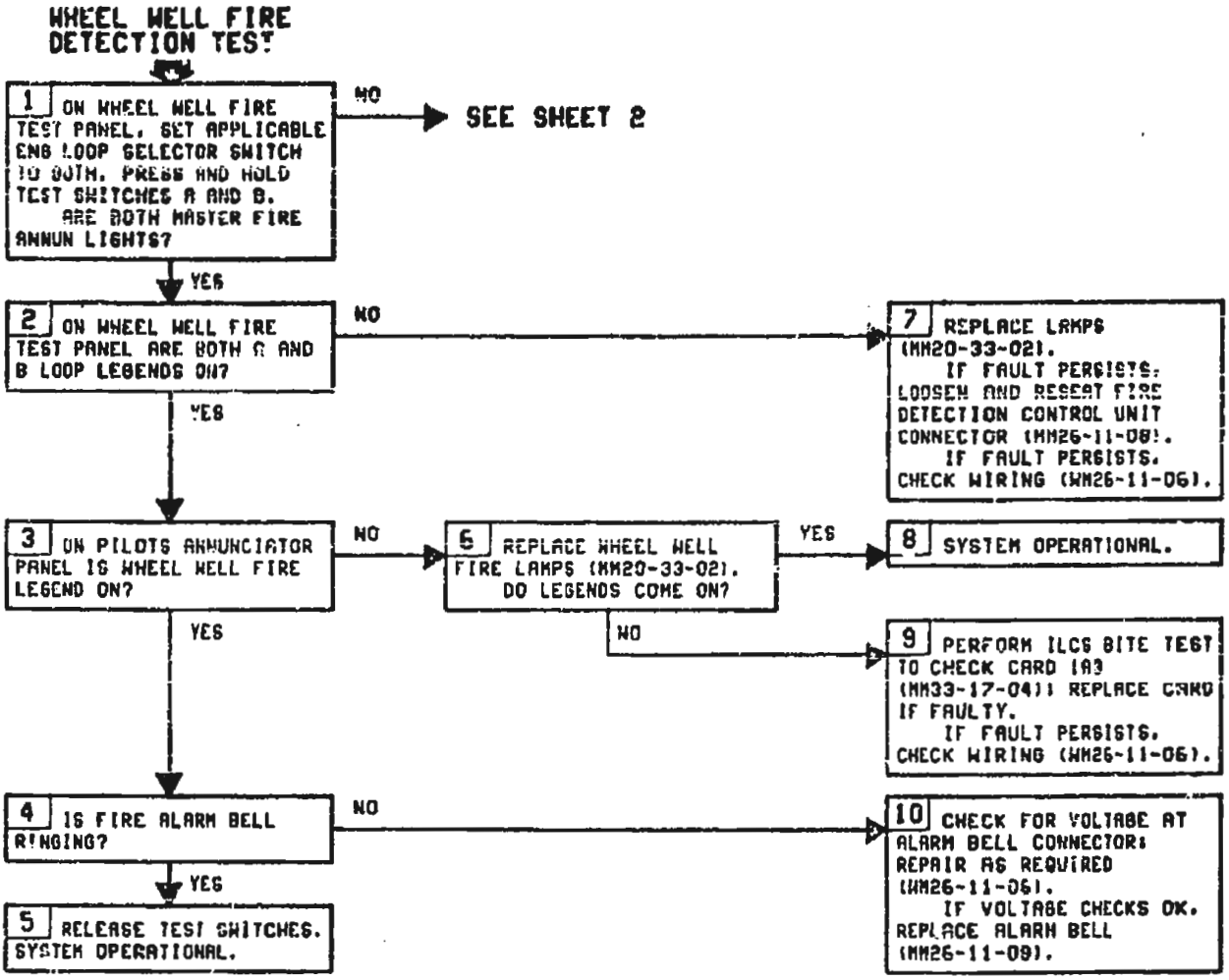
NOTE

(1) READ NEGATIVE VOLTAGE BY REVERSING LEADS ON VOM. READING IS AUTOMATIC IF USING DIGITAL METER.

M1-0008-86-510

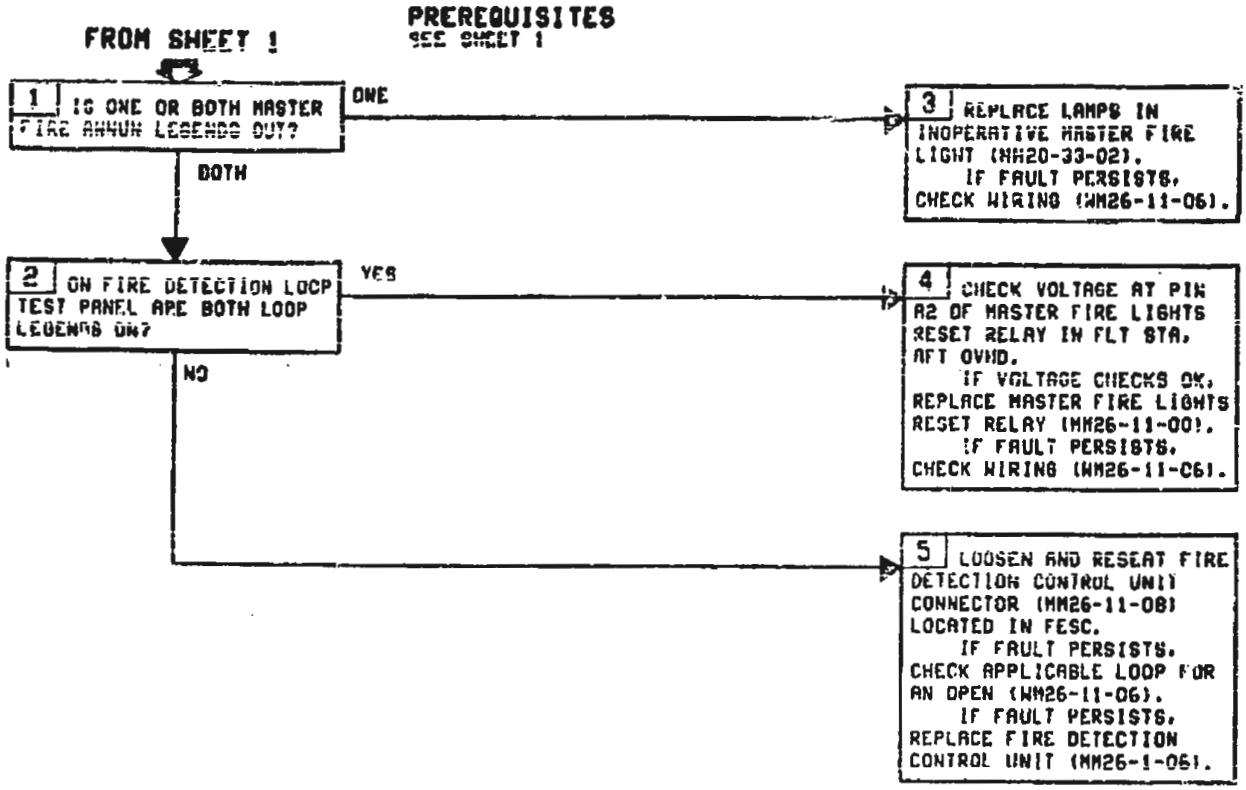
Well Loop A or B Light Remains On
Figure 107

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CLOSE CB'S: CB1-J4 CB3-S1
-J5 -S2
-J6
-L2


WHEEL WELL FIRE DETECTION TEST
1 ON WHEEL WELL FIRE TEST PANEL, SET APPLICABLE ENG LOOP SELECTOR SWITCH TO BOTH. PRESS AND HOLD TEST SWITCHES A AND B. ARE BOTH MASTER FIRE ANNUN LIGHTS?
NO
SEE SHEET 2
YES
2 ON WHEEL WELL FIRE TEST PANEL ARE BOTH A AND B LOOP LEGENDS ON?
NO
7 REPLACE LAMPS (MM20-33-02). IF FAULT PERSISTS, LOOSEN AND RESEAT FIRE DETECTION CONTROL UNIT CONNECTOR (MM26-11-08). IF FAULT PERSISTS, CHECK WIRING (MM26-11-06).
YES
3 ON PILOTS ANNUNCIATOR PANEL IS WHEEL WELL FIRE LEGEND ON?
NO
6 REPLACE WHEEL WELL FIRE LAMPS (MM20-33-02). DO LEGENDS COME ON?
YES
8 SYSTEM OPERATIONAL.
NO
9 PERFORM ILCS BITE TEST TO CHECK CARD 1A3 (MM33-17-04). REPLACE CARD IF FAULTY. IF FAULT PERSISTS, CHECK WIRING (MM26-11-06).
YES
4 IS FIRE ALARM BELL RINGING?
NO
10 CHECK FOR VOLTAGE AT ALARM BELL CONNECTOR; REPAIR AS REQUIRED (MM26-11-06). IF VOLTAGE CHECKS OK, REPLACE ALARM BELL (MM26-11-09).
YES
5 RELEASE TEST SWITCHES. SYSTEM OPERATIONAL.

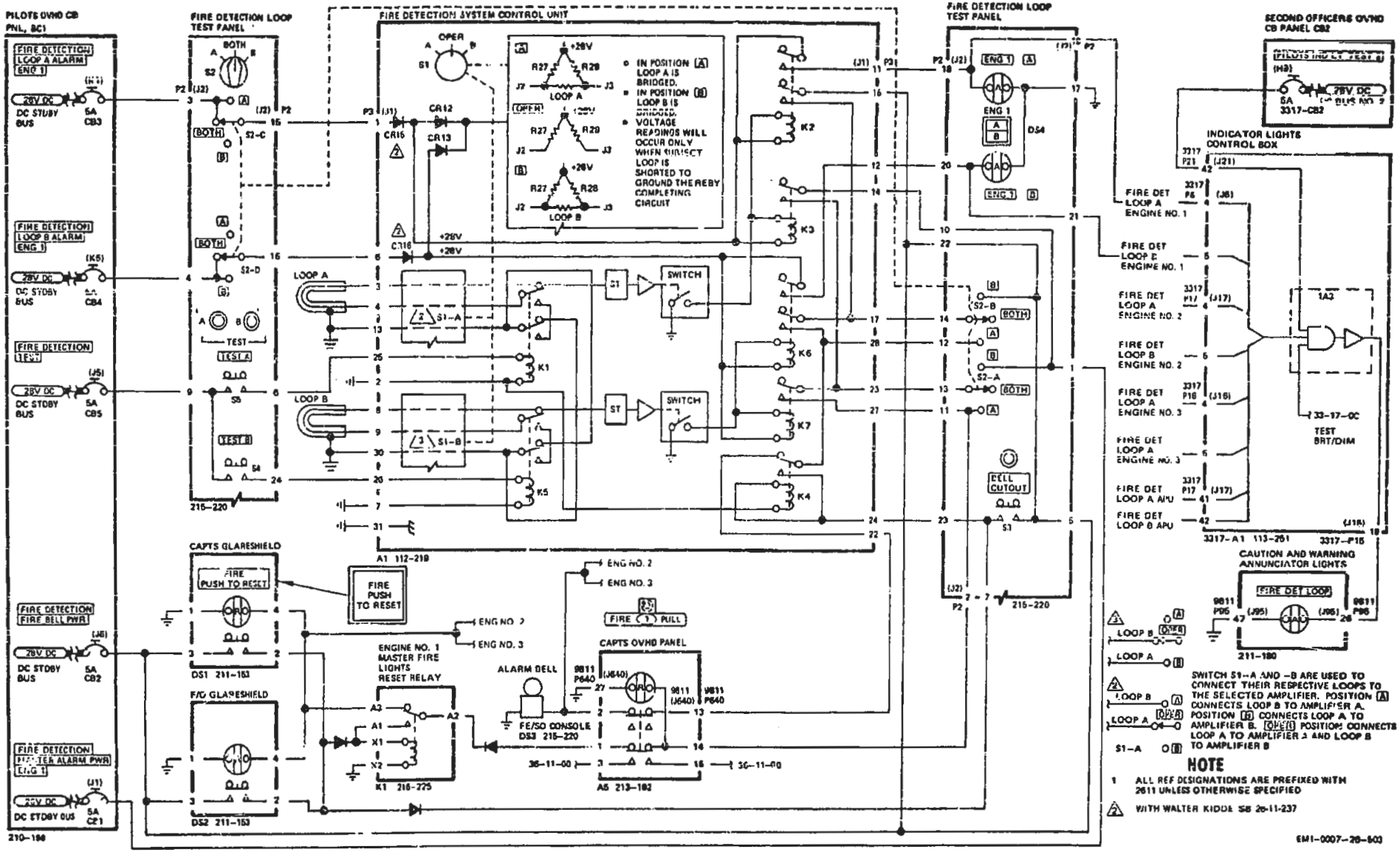
M1-0005-26-582

Well Fire Detection Test
Figure 108 (Sheet 1)

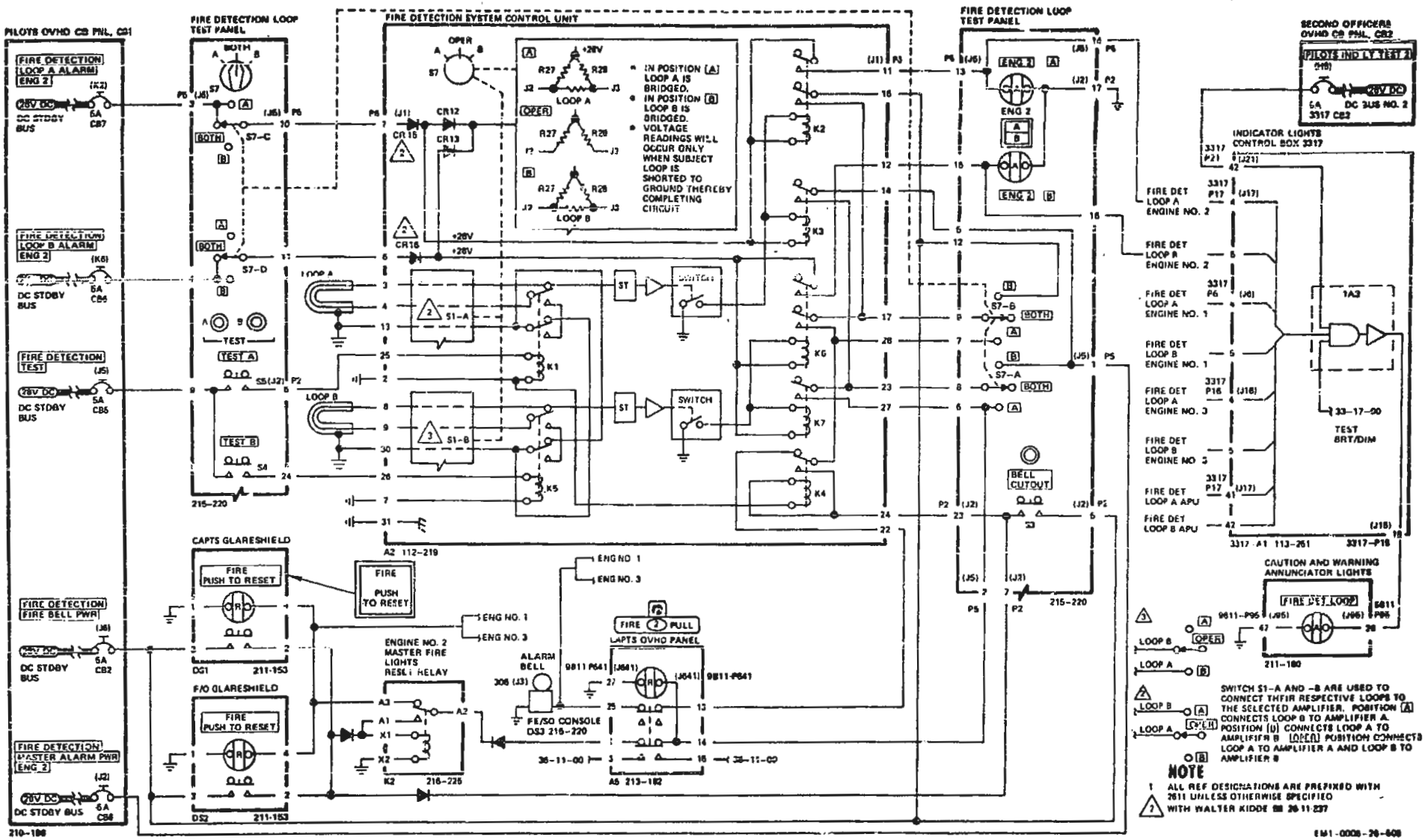

PREREQUISITES
SEE SHEET 1
FROM SHEET 1
1 IS ONE OR BOTH MASTER FIRE ANNUN LEGENDS OUT?
ONE
BOTH
3 REPLACE LAMPS IN INOPERATIVE MASTER FIRE LIGHT (MM20-33-02).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-06).
2 ON FIRE DETECTION LOOP TEST PANEL ARE BOTH LOOP LEGENDS ON?
YES
NO
4 CHECK VOLTAGE AT PIN A2 OF MASTER FIRE LIGHTS RESET RELAY IN FLT STA, AFT OVHD.
IF VOLTAGE CHECKS OK, REPLACE MASTER FIRE LIGHTS RESET RELAY (MM26-11-00).
IF FAULT PERSISTS, CHECK WIRING (MM26-11-06).
5 LOOSEN AND RESEAT FIRE DETECTION CONTROL UNIT CONNECTOR (MM26-11-08) LOCATED IN FESC.
IF FAULT PERSISTS, CHECK APPLICABLE LOOP FOR AN OPEN (MM26-11-06).
IF FAULT PERSISTS, REPLACE FIRE DETECTION CONTROL UNIT (MM26-1-06).

M1-0002-26-108

Well Fire Detection Test
Figure 108 (Sheet 2)



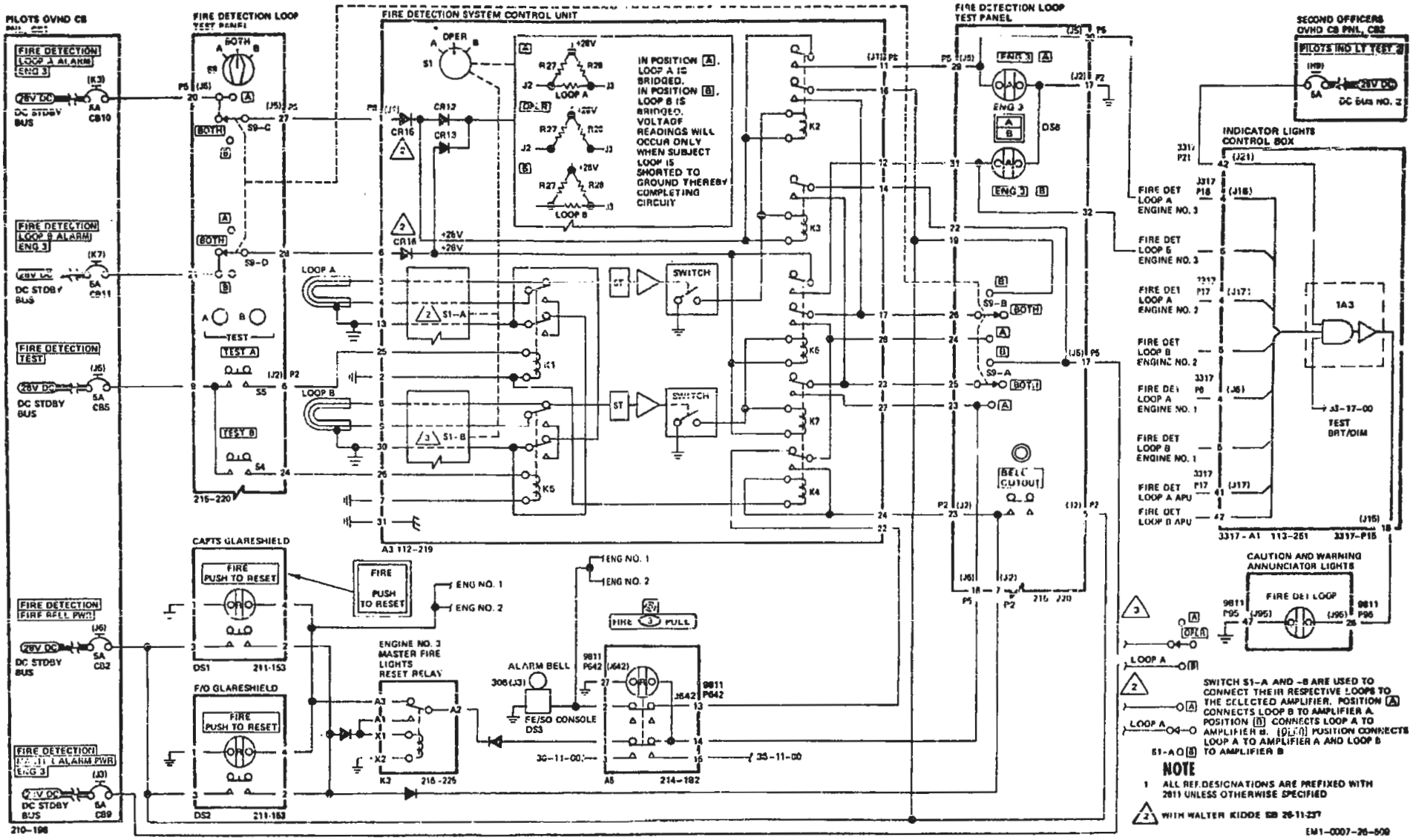
Engine No. 1 Fire Detection System Schematic
SCHEM 1



Engine No. 2 Fire Detection System Schematic
SCHEM 2

R
R
001B

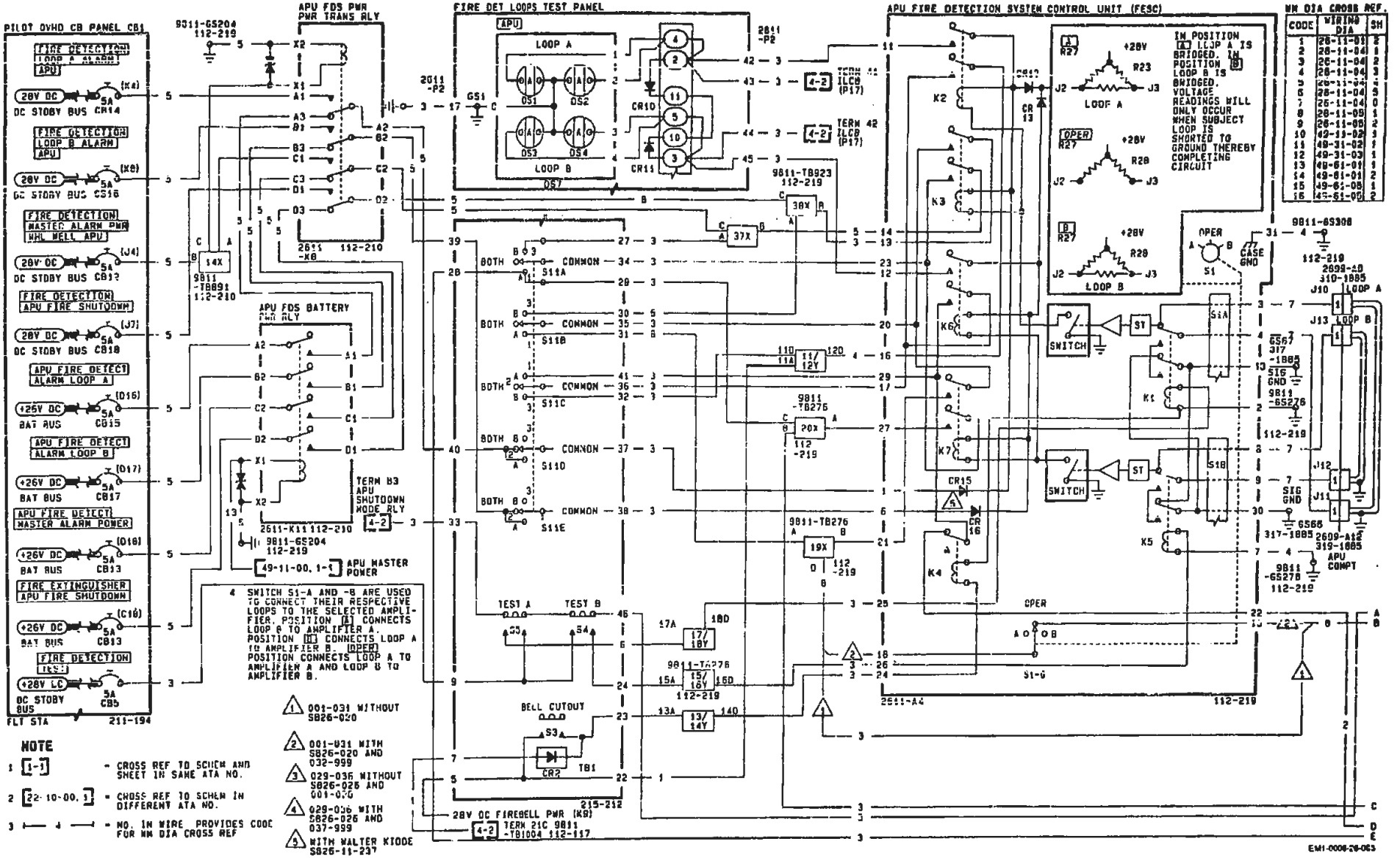
EFFECTIVITY: ALL


PILOTS OVHD CB
FIRE DETECTION LOOP TEST PANEL
FIRE DETECTION SYSTEM CONTROL UNIT
FIRE DETECTION LOOP TEST PANEL
SECOND OFFICERS OVHD CB PNL, CB2
INDICATOR LIGHTS CONTROL BOX
FIRE DETECTION LOOP A ALARM ENG 3
FIRE DETECTION LOOP B ALARM ENG 3
FIRE DETECTION TEST
FIRE DETECTION FIRE BELL PWR
FIRE DETECTION ALARM PWR ENG 3
DC STDBY BUS
IN POSITION A, LOOP A IS BRIDGED. IN POSITION B, LOOP B IS BRIDGED. VOLTAGE READINGS WILL OCCUR ONLY WHEN SUBJECT LOOP IS SHORTED TO GROUND THEREBY COMPLETING CIRCUIT
LOOP A
LOOP B
SWITCH
TEST
TEST A
TEST B
CAPTS GLARESHIELD
F/O GLARESHIELD
FIRE PUSH TO RESET
ENG NO. 3 MASTER FIRE LIGHTS RESET RELAY
ALARM BELL
FE/SO CONSOLE DS3
BELL CUTOUT
FIRE DET LOOP A ENGINE NO. 3
FIRE DET LOOP B ENGINE NO. 3
FIRE DET LOOP A ENGINE NO. 2
FIRE DET LOOP B ENGINE NO. 2
FIRE DET LOOP A ENGINE NO. 1
FIRE DET LOOP B ENGINE NO. 1
FIRE DET LOOP A APU
FIRE DET LOOP B APU
PILOTS IND LT TEST
TEST BRT/DIM
CAUTION AND WARNING ANNUNCIATOR LIGHTS
FIRE DET LOOP
SWITCH S1-A AND -B ARE USED TO CONNECT THEIR RESPECTIVE LOOPS TO THE SELECTED AMPLIFIER. POSITION A CONNECTS LOOP B TO AMPLIFIER A. POSITION B CONNECTS LOOP A TO AMPLIFIER B. BOTH POSITION CONNECTS LOOP A TO AMPLIFIER A AND LOOP B TO AMPLIFIER B
NOTE
1 ALL REF.DESIGNATIONS ARE PREFIXED WITH 2011 UNLESS OTHERWISE SPECIFIED
2 WITH WALTER KIDDE SB 26-11-237
EM1-0007-26-509

Engine No. 3 Fire Detection System Schematic
SCHEM 3

R
R
001B

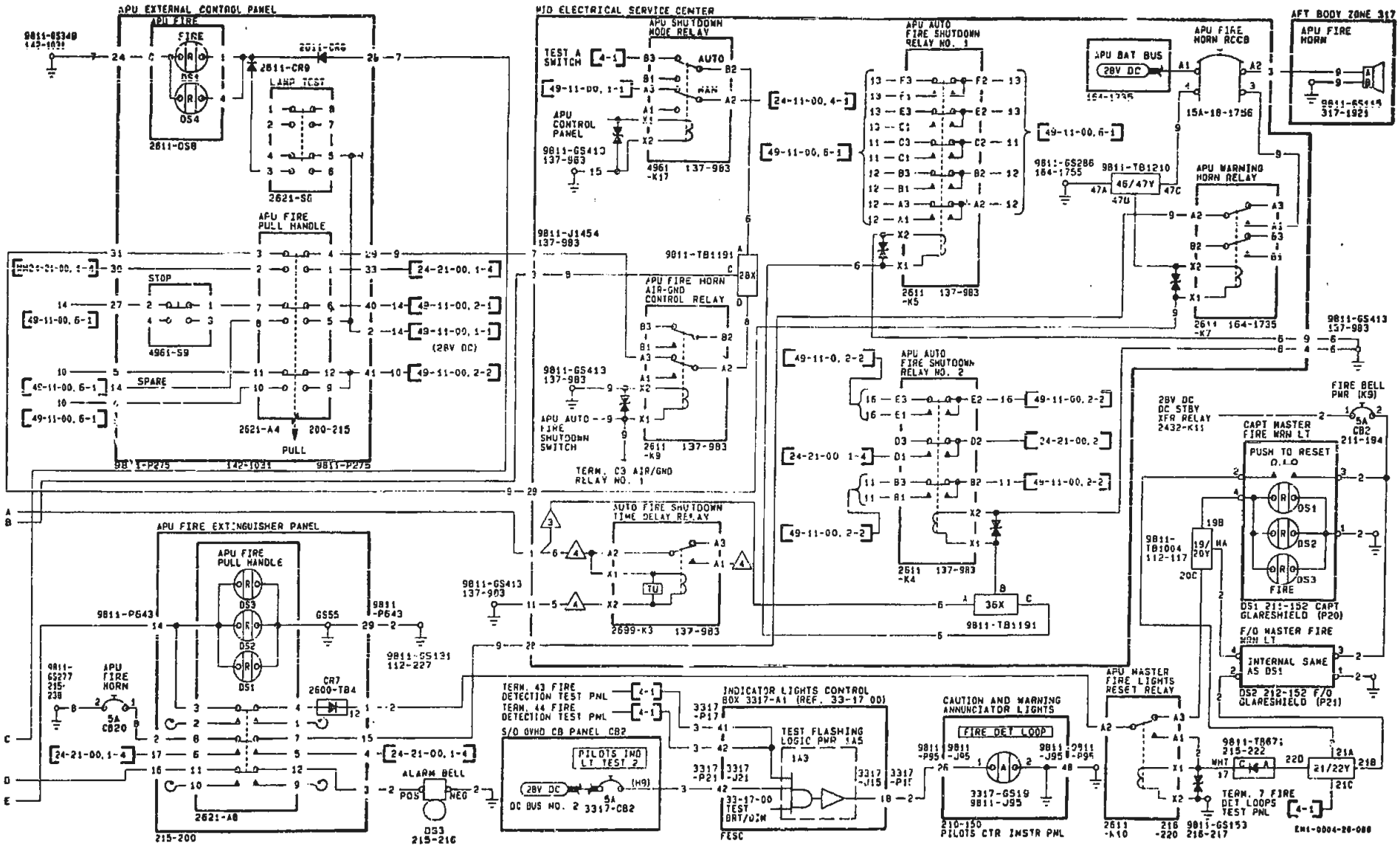
EFFECTIVITY: ALL



R46 APU FIRE DETECTION SYSTEM SCHEMATIC, SCHEM 4 (SHEET 1) (001, 26-11-00, 101) (FW)

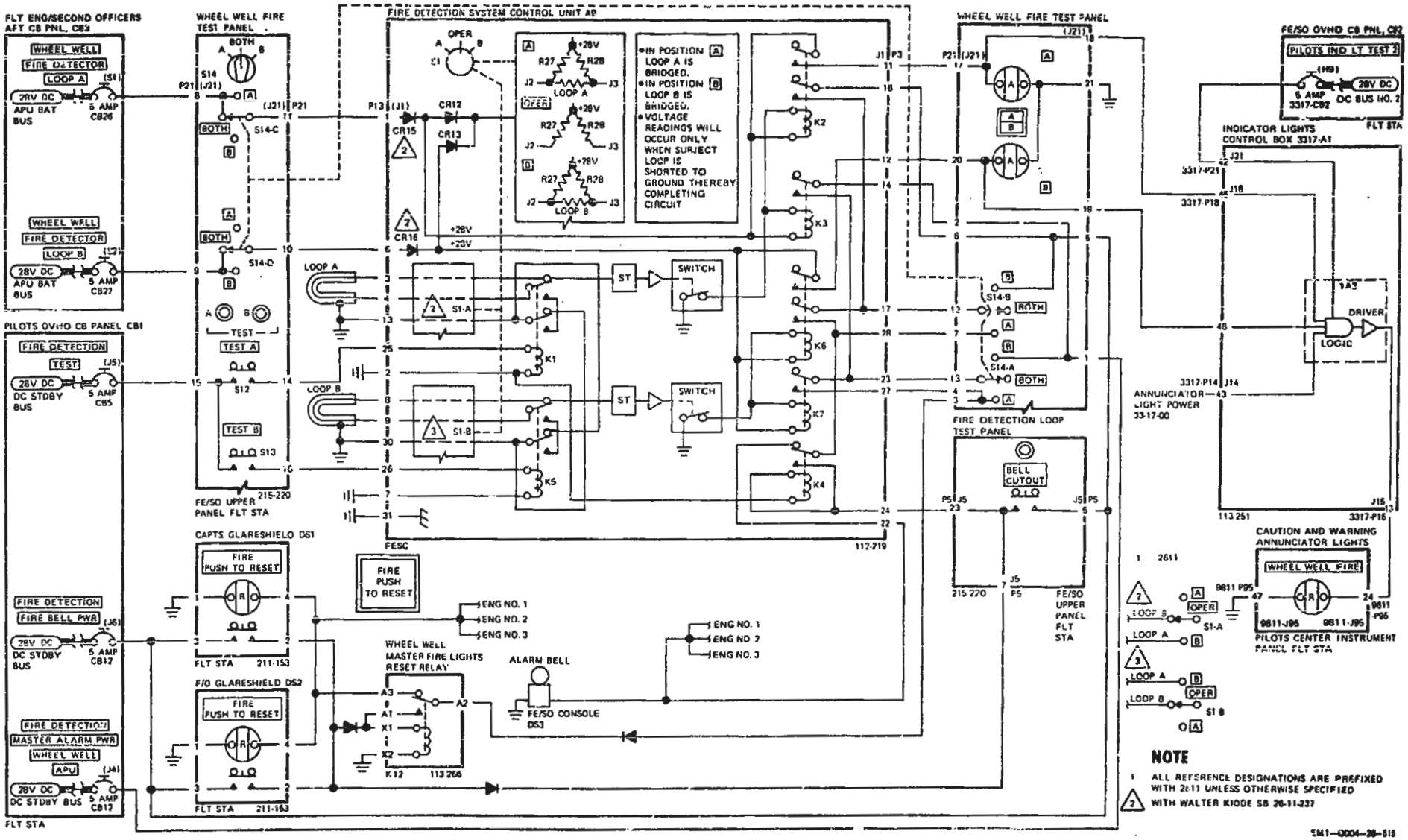
APU Fire Detection System Schematic
SCHEM 4 (Sheet 1)

R EFFECTIVITY: ALL
R
001B



APU Fire Detection System Schematic
SCHEM 4 (Sheet 2)

R EFFECTIVITY: ALL
R
C01B



MLG Wheel Well Fire Detection System Schematic
SCHEM 5

R EFFECTIVITY: ALL
R
001B

FIRE DETECTION SYSTEM - ADJUSTMENT AND TEST

1. General

The BITE tests are performed while the engines and APU are not running, in order to prevent undesired engine or APU shutdown.

The procedure is divided into 2 sections: Engine System Test, and Wheel Well System Test. The engine system test is identical for all engines and the APU. It can be used interchangeably by substituting engine No. 2, engine No. 3, or the APU for engine No. 1. The APU has additional warning indicators which are checked when appropriate.

2. Referenced Procedure

24-41-00 External Power/Ground Power System - Maintenance Practices

3. Adjustment/Test

A. BITE Test (Engine System)

(1) On pilots overhead circuit breaker panel CB1, zone 210, check that the following FIRE DETECTION and APU FIRE DETECTION circuit breakers are closed:

R MASTER ALARM PWR ENG 1 (J1), 2 (J2), 3 (J3) and
R WHL WELL APU (J4)

TEST (J5)

FIREBELL PWR (J6)

APU FIRE SHUTDOWN (J7) and (C18)

APU SEC EMER SHUTOFF (J8)

LOOP A ALARM ENG 1 (K1), 2 (K2), 3 (K3)

LOOP A ALARM APU (K4)

LOOP B ALARM ENG 1 (K5), 2 (K6), 3 (K7)

LOOP B ALARM APU (K8)

APU FIRE DETECT MASTER ALARM PWR (D18)

APU FIRE DETECT ALARM LOOP A (D16), B (D17)

ANN RESET (L9)

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, check that the following circuit breakers are closed:

WHEEL WELL FIRE DETECTOR LOOP A (S1) and LOOP B (S2)

FIRE HORN (S6)

POWER CONTROL (S13)

APU POWER BAT PWR (B10)

APU T/R PWR (B11)

R CAUTION: THE FOLLOWING CIRCUIT BREAKERS MUST BE OPEN TO
R PREVENT INADVERTENT DISCHARGE OF THE FIRE
R EXTINGUISHER CONTAINERS.

On pilots overhead circuit breaker panel CB1, open and tag the following FIRE EXTINGUISHER circuit breakers:

ENG 1 - MAIN (C10)

ENG 1 - ALTN (C11)

ENG 2 - MAIN (C12)

ENG 2 - ALTN (C13)

ENG 3 - MAIN (C14)

ENG 3 - ALTN (C15)

APU - MAIN (C16)

APU - ALTN (C17)

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag the following circuit breakers:

INLET DOOR (S9)

IGNITION (S11)

(2) Turn on electrical power (Ref. 24-41-00). For the APU test, turn on the APU MASTER power switch.

(3) On the APU external control panel, zone 142, pull down the remote control APU fire handle (do not twist) and leave it down until otherwise directed. Disregard the panel FIRE indicator until otherwise directed (Ref. Fig. 501).

(4) On the FIRE DETECTION LOOP TEST panel, in the Flight Engineer/Second Officers upper panel, zone 215, place ENG 1 loop select switch in BOTH position. Place ENG 2, ENG 3, and APU loop select switches in B position (Ref. Fig. 502).

(5) Depress and hold TEST A pushbutton switch and verify that:

R ENG 1 loop A light comes on

FIRE DET LOOP light on pilots center instrument panel, zone 210, flashes on and off and then remains on

Master FIRE warning switchlights on the glareshield panel, zone 210, remain off

Fire alarm bell does not ring

Lights in all fire emergency engine shutoff control handles and the APU fire emergency shutoff control handle remain off (Ref. Fig. 503 and 504).

(6) Release the TEST A pushbutton switch and verify that:

R ENG 1 loop A light goes off

FIRE DET LOOP light goes off

(7) Place ENG 1 loop select switch in A position.

(8) Depress and hold TEST A pushbutton switch and verify that:

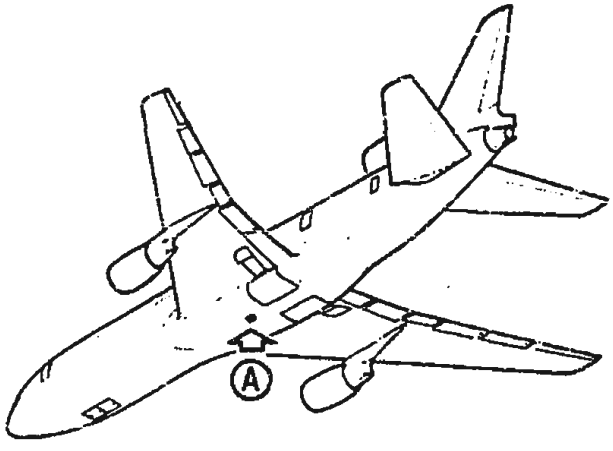
Red indicator light on FIRE PULL handle, located on pilots overhead panel comes on

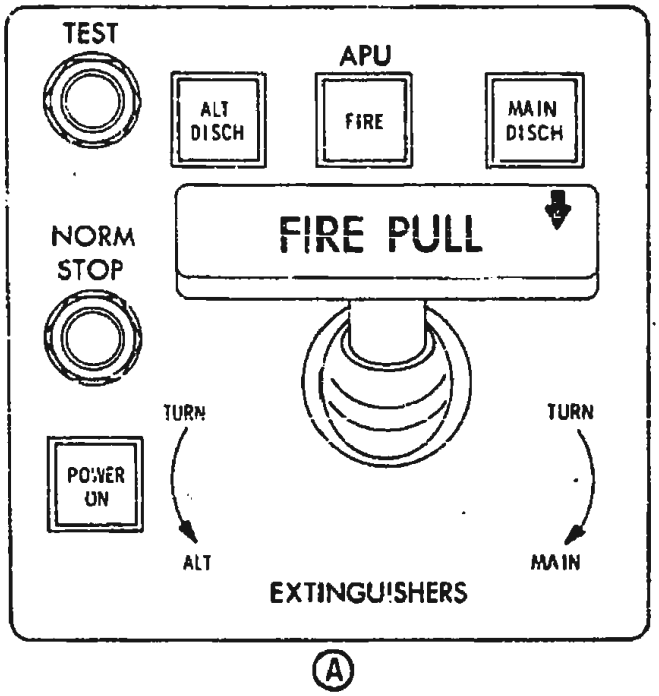
Master FIRE warning lights come on

ENG 1 loop A light comes on

FIRE DET LOOP light starts flashing then remains on

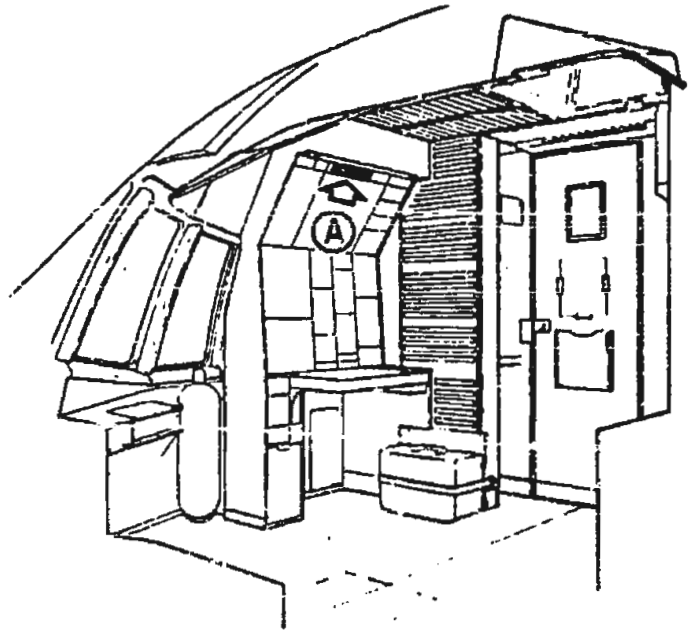
Fire alarm bell rings



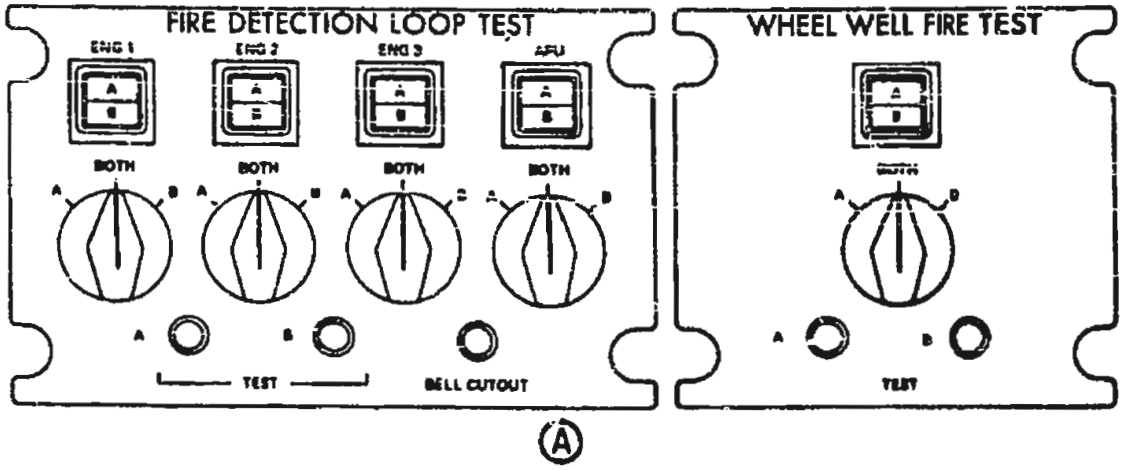


HH 5890
A51-A01-26-007

APU External Control Panel
Figure 501

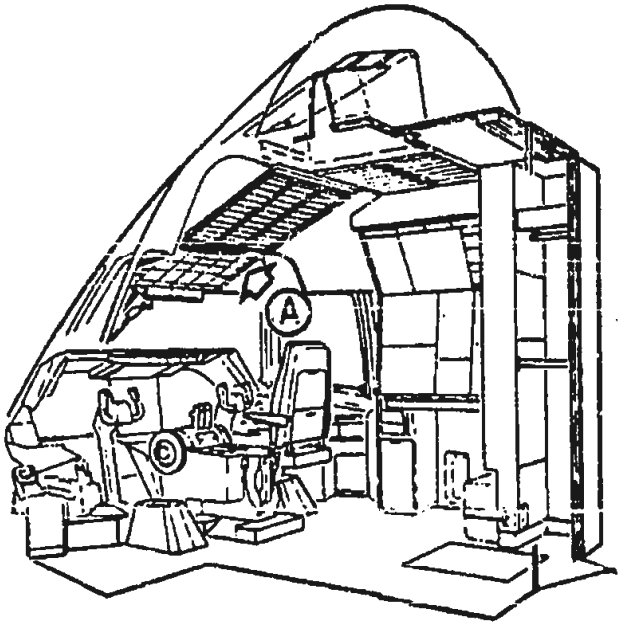


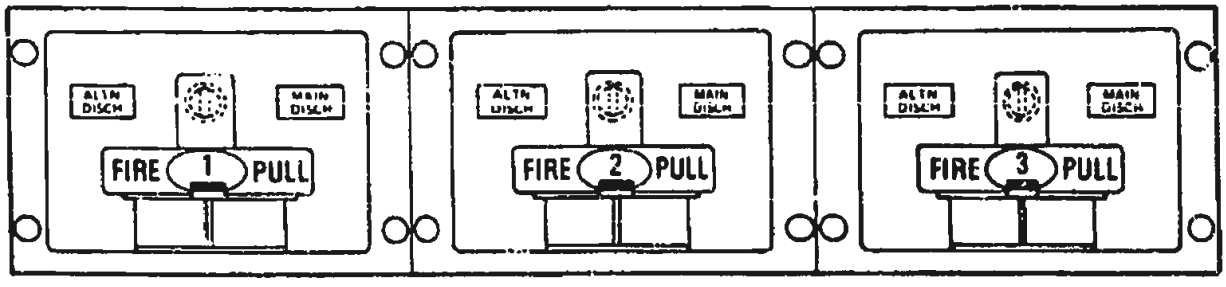
ZONE 215
FLIGHT ENGINEER/SECOND OFFICERS STATION



MH 5179
M1-A00-26-018

Fire Detection Loop Test and Wheel Well Fire Test Panels
Figure 502





M1-0101-26-063

Fire Emergency Engine Shutoff Control
Figure 503

(9) Depress the BELL CUTOUT switch and verify that the fire alarm bell stops ringing.

(10) Release and depress Loop "A" test button.

(11) Depress the First Officers master FIRE warning switchlight and verify that both FIRE warning lights go off.

(12) Release the TEST A pushbutton switch and verify that:

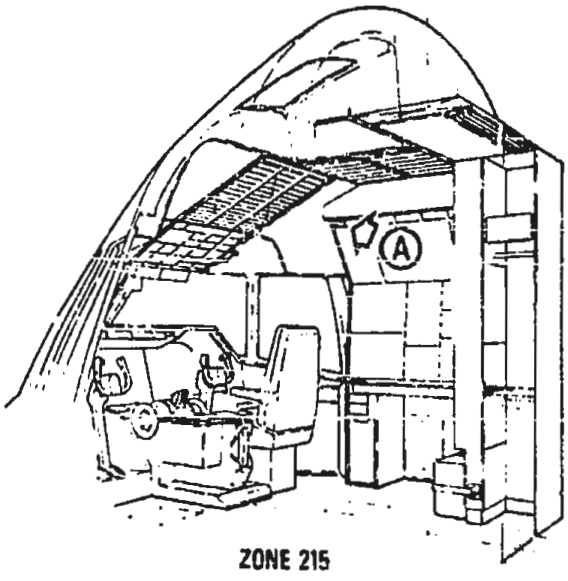
Red indicator light on FIRE PULL handle i goes off

R ENG 1 loop A light goes off

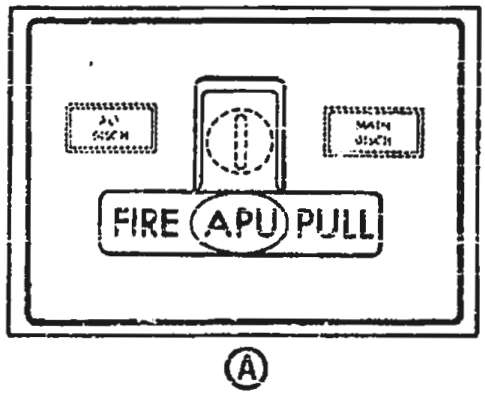
FIRE DET LOOP light goes off

NOTE: Before performing Steps 3A(4) through 3A(12) for the APU, push the remote control APU fire handle up to the normal position.

(13) Perform Steps 3A(4) through 3A(12) for engines No. 2 and No. 3 and the APU.



ZONE 215
FLIGHT ENGINEER/SECOND OFFICERS STATION



HH 5481
M1-0101-26-004

APU Fire Emergency Shutoff Control
Figure 504

NOTE: Before proceeding with the following steps, pull down (but do not twist) the remote control APU fire handle on the APU external control panel.

(14) On FIRE DETECTION LOOP TEST panel place all loop select switches in A position.

(15) Place ENG 1 loop select switch in BOTH position.

(16) Depress and hold TEST B pushbutton switch and verify that:

ENG 1 loop B light comes on

FIRE DET LOOP light flashes on and off then remains on

Master FIRE warning lights remain off

Lights in all fire emergency engine shutoff control handles and APU fire emergency shutoff control handle remain off

Fire alarm bell does not ring

(17) Release the TEST B pushbutton switch and verify that:

ENG 1 loop B light goes off

FIRE DET LOOP light goes off

(18) Place ENG 1 loop select switch in B position.

(19) Depress and hold TEST B pushbutton switch and verify that:

Red indicator light on FIRE PULL handle 1 comes on

R Master FIRE warning lights come on

ENG 1 loop B light comes on

R FIRE DET LOOP light starts flashing then remains on

Fire warning bell rings

(20) Depress the Captains master FIRE warning switchlight and verify that:

Master FIRE warning switchlights go off

Fire bell stops ringing

(21) Release TEST B pushbutton switch and verify that:

Red indicator light on FIRE PULL handle 1 goes off

R ENG 1 loop B light goes off

FIRE DET LOOP light goes off

(22) Pull FIRE PULL handle 1 outward.

(23) Depress and hold TEST B pushbutton switch and verify that:

ENG 1 loop B light comes on

FIRE DET LOOP light starts flashing then remains on

(24) Push FIRE PULL handle 1 back into position and verify that:

Master FIRE warning lights come on

Fire bell starts ringing

(25) Release TEST B pushbutton switch and verify that:

MASTER FIRE warning lights go off

Fire bell stops ringing

ENG 1 loop B light goes off

FIRE DET LOOP light goes off

(26) Perform Steps 3A(13) through 3A(24) for engines No. 2 and No. 3.

(27) On pilots overhead circuit breaker panel CB1, open and tag circuit breaker APU FIRE SHUTDOWN (J7). Assure APU MASTER power switch is on.

(28) Perform Steps 3A(18) through 3A(24) for the APU.

(29) On the APU external control panel, push the APU FIRE PULL handle back into the normal position and close APU FIRE SHUTDOWN (J7) circuit breaker on panel CB1.

(30) On the FIRE DETECTION LOOP TEST panel place all loop select switches in BOTH position.

(31) Depress and hold TEST A and TEST B pushbutton switches and verify that:

Red indicator light on FIRE PULL handle comes on

Master FIRE warning lights come on

Loop A and B lights for ENG 1, ENG 2, ENG 3, and APU come on

FIRE DET LOOP light starts flashing then remains on

APU fire horn sounds

FIRE light on the APU external control panel comes on

Fire alarm bell rings

(32) Pull the APU FIRE PULL handle outward and verify that the APU fire horn stops sounding.

(33) Push the APU FIRE PULL handle back into position and verify that the APU fire horn sounds.

(34) On the APU external control panel, pull down the APU FIRE PULL handle (but do not twist) and verify that the fire horn stops sounding.

(35) Push the APU FIRE PULL handle back into position and verify that the fire horn sounds.

(36) Release TEST A and TEST B pushbutton switches and verify that:

Red indicator light on FIRE PULL handle and APU FIRE PULL handle go off

Master FIRE warning light goes off

R Loop A and loop B lights for ENG 1, ENG 2, ENG 3, and APU go off

FIRE DET LOOP light goes off

Fire alarm bell stops ringing

APU fire horn stops sounding

FIRE light on the APU external control panel goes off

B. BITE Test (Wheel Well System)

(1) On the WHEEL WELL FIRE TEST panel (Ref. Fig. 502), place the loop select switch in BOTH position.

(2) Depress and hold TEST A pushbutton switch and verify that:

Wheel well loop A light comes on

WHEEL WELL FIRE light on the pilots center instrument panel flashes then remains on

Master FIRE warning lights on the glareshield panel remain off

R Fire alarm bell does not ring

(3) Release the TEST A pushbutton switch and verify that:

Wheel well loop A light goes off

WHEEL WELL FIRE light goes off

(4) Place the loop select switch in A position.

(5) Depress and hold TEST A pushbutton switch and verify:

Wheel well loop A light comes on

WHEEL WELL FIRE light flashes then remains on

Master FIRE warning lights come on

Fire alarm bell rings

(6) Depress the BELL CUTOUT switch on the FIRE DETECTION LOOP TEST panel and verify that the fire alarm bell stops ringing.

(7) Depress the First Officers master FIRE warning switchlight and verify that both FIRE warning lights go off.

(8) Release the TEST A pushbutton switch and verify that:

Wheel well loop A light goes off

WHEEL WELL FIRE light goes off

(9) Place the loop select switch in BOTH position.

(10) Depress and hold TEST B pushbutton switch and verify that:

R Wheel well loop B light comes on

WHEEL WELL FIRE light flashes then remains on

Master FIRE warning lights remain off

Fire alarm bell does not ring

(11) Release the TEST B pushbutton switch and verify that:

R Wheel well loop B light goes off

WHEEL WELL FIRE light goes off

(12) Place the loop select switch in B position.

(13) Depress and hold TEST B pushbutton switch and verify that:

R Wheel well loop B light comes on

WHEEL WELL FIRE light flashes then remains on

Master FIRE warning lights come on

Fire alarm bell rings

(14) Depress the Captains master FIRE warning light and verify that:

R Master FIRE warning lights go off

Fire bell stops ringing

(15) Release the TEST B pushbutton switch and verify that:

R Wheel well loop B light goes off

WHEEL WELL FIRE light goes off

(16) Place the loop select switch in BOTH position.

(17) Depress and hold TEST A and TEST B pushbutton switches and verify that:

R Wheel well loop A and B lights come on

WHEEL WELL FIRE light flashes then remains on

Master FIRE warning lights come on

Fire alarm bell rings

(18) Release TEST A and TEST B pushbutton switches and verify that:

Wheel well loop A and B lights go off

WHEEL WELL FIRE light goes off

Master FIRE warning lights go off

Fire alarm bell stops ringing

(19) Remove tags and close the circuit breakers opened in Step 3A(1).

(20) Turn off electrical power (Ref. 24-41-00).

R C. Test Engine Fire Detection Loops

R WARNING: DO NOT USE HIGH VOLTAGE TEST EQUIPMENT IN ANY AREA
R WHERE EXPLOSIVE VAPORS FROM FUEL, CLEANING OR SEALING
R COMPOUNDS, CEMENTS, OR OTHER VOLATILE MIXTURES MAY BE
R PRESENT.

R (1) On pilots overhead circuit breaker panel CB1, zone 210,
R open and tag the following FIRE DETECTION circuit
R breakers:

R LOOP A ALARM - ENG 1 (K1), ENG 2 (K2), ENG 3 (K3)

R LOOP B ALARM - ENG 1 (K5), ENG 2 (K6), ENG 3 (K7)

R MASTER ALARM PWR - ENG 1 (J1), ENG 2 (J2), ENG 3
R (J3)

R TEST (J5)

R FIRE BELL PWR (J6)

R (2) Remove forward fairing (Ref. 6-40-00).

R (3) Refer to fig. 501, disconnect electrical connector
R D4970P to test loop A and/or connector D4968P to test
R loop B as required.

R (4) Test engine loop continuity resistance as follows:

R (a) To test loop A, connect avometer leads to pins 1
R and 2 of connector plug D4970P.

R (b) Check that the resistance between pins is 29 ohms
R at 15 deg.C. (59 deg.F.).

(c) Disconnect avometer leads.

(d) To test loop B, connect avometer leads to pins 1 and 2 of connector plug D4968P. Repeat Steps 4C(4)(b) and (c).

(5) Test engine loop insulation resistance as follows:

NOTE: To test loop A or B insulation resistance, each sensing element in the circuits must be checked individually Ref. Paragraph 4D.

(6) Connect and secure electrical connectors D4970P and D4968P.

(7) Fit forward fairings (Ref. 6-40-00).

(8) Close circuit breakers opened in Paragraph 4C(1).

D. Test Engine Sensing Elements

WARNING: DO NOT USE HIGH VOLTAGE TEST EQUIPMENT IN ANY AREA WHERE EXPLOSIVE VAPORS FROM FUEL, CLEANING OR SEALING COMPOUNDS, CEMENTS, OR OTHER VOLATILE MIXTURES MAY BE PRESENT.

(1) On Pilots overhead circuit breaker panel CB1, zone 210, open and tag the following FIRE DETECTION circuit breakers:

LOOP A ALARM - ENG 1 (K1), ENG 2 (K2), ENG 3 (K3)

LOOP B ALARM - ENG 1 (K5), ENG 2 (K6), ENG 3 (K7)

MASTER ALARM PWR - ENG 1 (J1), ENG 2 (J2), ENG 3 (J3)

TEST (J5)

FIRE BELL PWR (J6)

(2) Deactivate and tag thrust reverser and associated systems, and fit thrust reverser mechanical locks (Ref. 78-30-00, Servicing).

WARNING: ENSURE THRUST REVERSER SYSTEM IS LOCKED IN FORWARD THRUST POSITION WHILE WORK IS IN PROGRESS.

(3) Open L.H. and R.H. hinged cowls (Ref. 71-11-00, Servicing).

(4) Position spacer and side pieces in cold stream duct.

(5) Remove the following access panels (Ref. 72-03-00, Removal/Installation):

Combustion section L.H. side, R.H. side and upper fairings

Front pylon fairing R.H. access panel

CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING. DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE BASED SOLVENTS.

(6) Disconnect electrical connectors from both ends of all sensing elements of loop to be checked, discard gaskets.

(7) Test engine sensing element continuity resistances:

(a) Connect leads of avometer to center contacts at both ends of each element.

(b) Check that each element continuity resistance is within the following limits:

Sensor Assembly Part No.	Location	Continuity resistance ohms
WKA35835	Zone 3	2.65 max
WKA36614	Zone 2 top	4.70 max
WKA36615	Zone 2 bottom	5.04 max
896051	Zone 1 top	3.10 max
895917	Zone 1 bottom	6.73 max
894885	Gearcase	4.06 max
R 472260	Gearbox	1.71 max
	High temperature elements (S.B. 72-5297):	
WKA35310	Zone 2 top	4.70 max

Sensor Assembly Part No.	Location	Continuity resistance ohms
WKA35311	Zone 2 bottom	5.04 max

(c) Disconnect avometer leads

NOTE: If, during fault finding procedures, the continuity test above fails to isolate the fault, carry out a continuity check of all engine loop connections and wiring.

(8) Check engine sensing element insulation resistance:

CAUTION: WHEN MAKING INSULATION RESISTANCE CHECKS, DO NOT APPLY VOLTAGE FOR LONGER THAN IS REQUIRED TO OBTAIN A STEADY READING.

(a) Using a 100 volt dc source, check insulation resistance by connecting one lead of megohmmeter to element sheath and the other lead to the center contact at either end of element. The resistance reading must be no lower than that specified for the particular sensor (Ref. Table 501).

NOTE: The minimum resistance permissible will vary with the ambient temperature of the test environment, the higher the ambient temperature the lower will be the insulation resistance.

(b) If the resistance reading of the sensor being checked is lower than that specified replace sensing element.

(c) Disconnect megohmmeter leads.

CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE BASED SOLVENTS.

(9) Ensure connectors are free from dirt, oil, and moisture, then fit a new gasket at each connector, with flat side of gasket towards the element assembly.

NOTE: Apply a light coat of DC-4 Silicone Grease to the copper gaskets. Avoid getting grease in the connector cavity or on the connector contacts.

A new gasket must be fitted every time a connection is made.

CAUTION: DO NOT TWIST THE CONNECTORS WHEN TORQUE TIGHTENING.

(10) Connect all electrical connectors disconnected in operation (8), torque tighten to 60 ± 10 lb.in. (6.78 Nm), and lock-wire.

(11) Fit the following access panels (Ref. 72-03-00, Removal/Installation):

Front pylon fairing R.H. access panel. Combustion section L.H. side. R.H. side and upper fairings.

(12) Remove spacer and side pieces from cold stream duct.

(13) Close L.H. and R.H. hinged cowls (Ref. 71-11-00, Servicing).

(14) Unlock and reactivate thrust reverser and associated systems (Ref. 78-30-00, Servicing).

(15) Close circuit breakers opened in Paragraph 4D(1).

(16) Provide electrical power (Ref. 24-41-00).

(17) Close each system test switch in turn and note that the appropriate warning devices operate.

(18) Release (open) the test switch and check that the warning devices cancel.

(19) Remove electrical power (Ref. 24-41-00).

Minimum Resistance Per Temperature Range

Sensor Part Number	15.6°C (60°F)	17.8°C (64°F)	20.0°C (68°F)	22.2°C (72°F)	24.4°C (76°F)	26.7°C (80°F)
Zone 2 Top WKA35310	1.625	1.425	1.30	1.20	1.025	1.00
Zone 2 Bottom WKA35311	1.525	1.30	1.125	0.975	0.90	0.80
Zone 3 WKA35835	4.35	3.76	3.2	2.7	2.25	1.85
Zone 2 Top WKA36614	1.625	1.425	1.30	1.20	1.025	1.00
Zone 2 Bottom WKA36615	1.525	1.30	1.125	0.975	0.90	0.80
Gearbox 472260	4.38	3.85	3.39	2.98	2.63	2.33
Gear Case 894885	1.85	1.63	1.43	1.26	1.11	0.98
Zone 1 Bottom 895917	1.1	0.95	0.85	0.75	0.66	0.58
Zone 1 Top 896051	2.4	2.13	1.87	1.65	1.45	1.25

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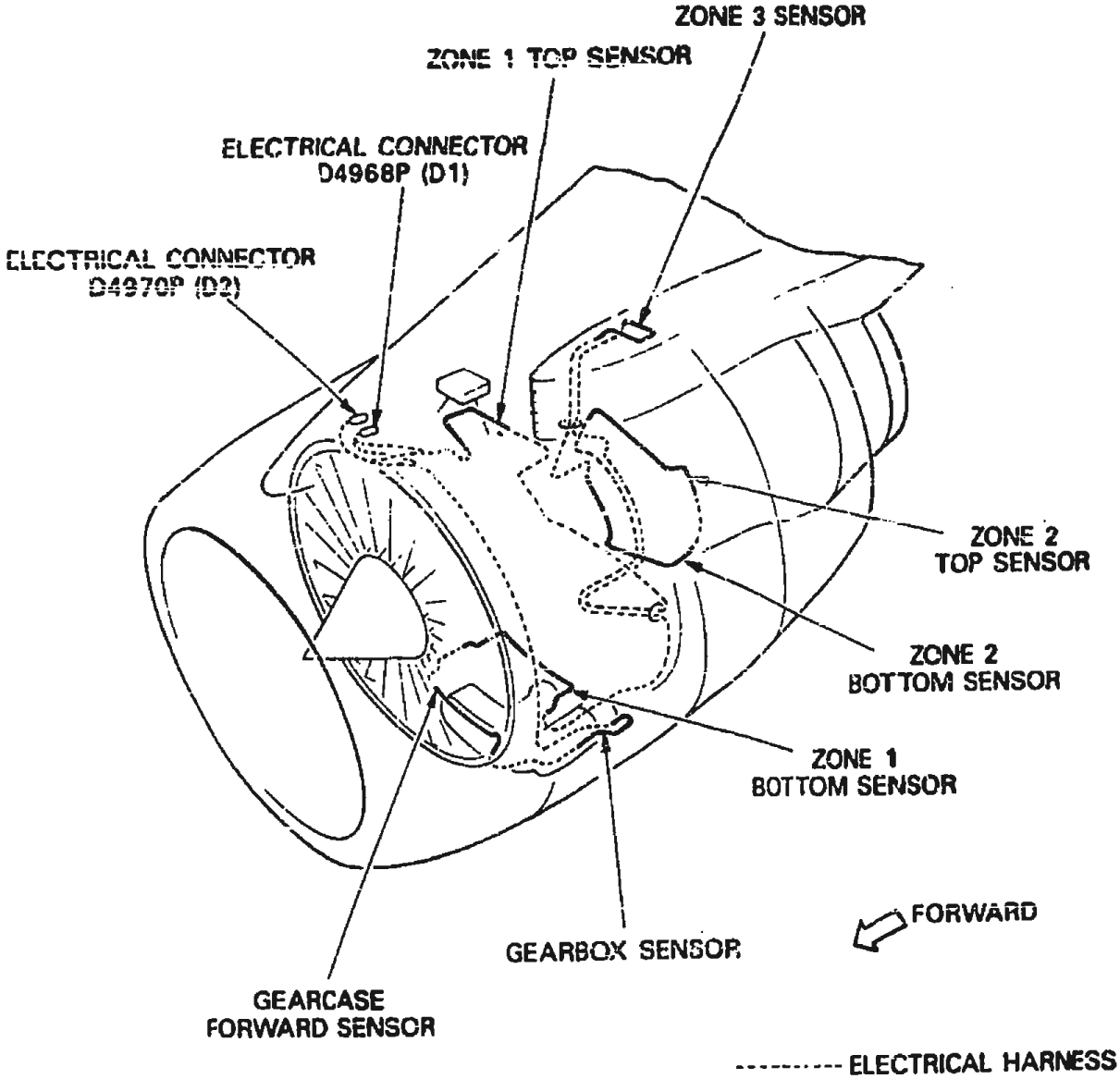
R Sensor Insulation Resistance Variations
R Table 501

R EFFECTIVITY: ALL
R
001B



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Engine Fire Detection System
Component Locations
Figure 505

CR **NBR 2 ENGINE POSITION GEARCASE SENSOR ASSEMBLY**
CR **MAINTENANCE PRACTICES**

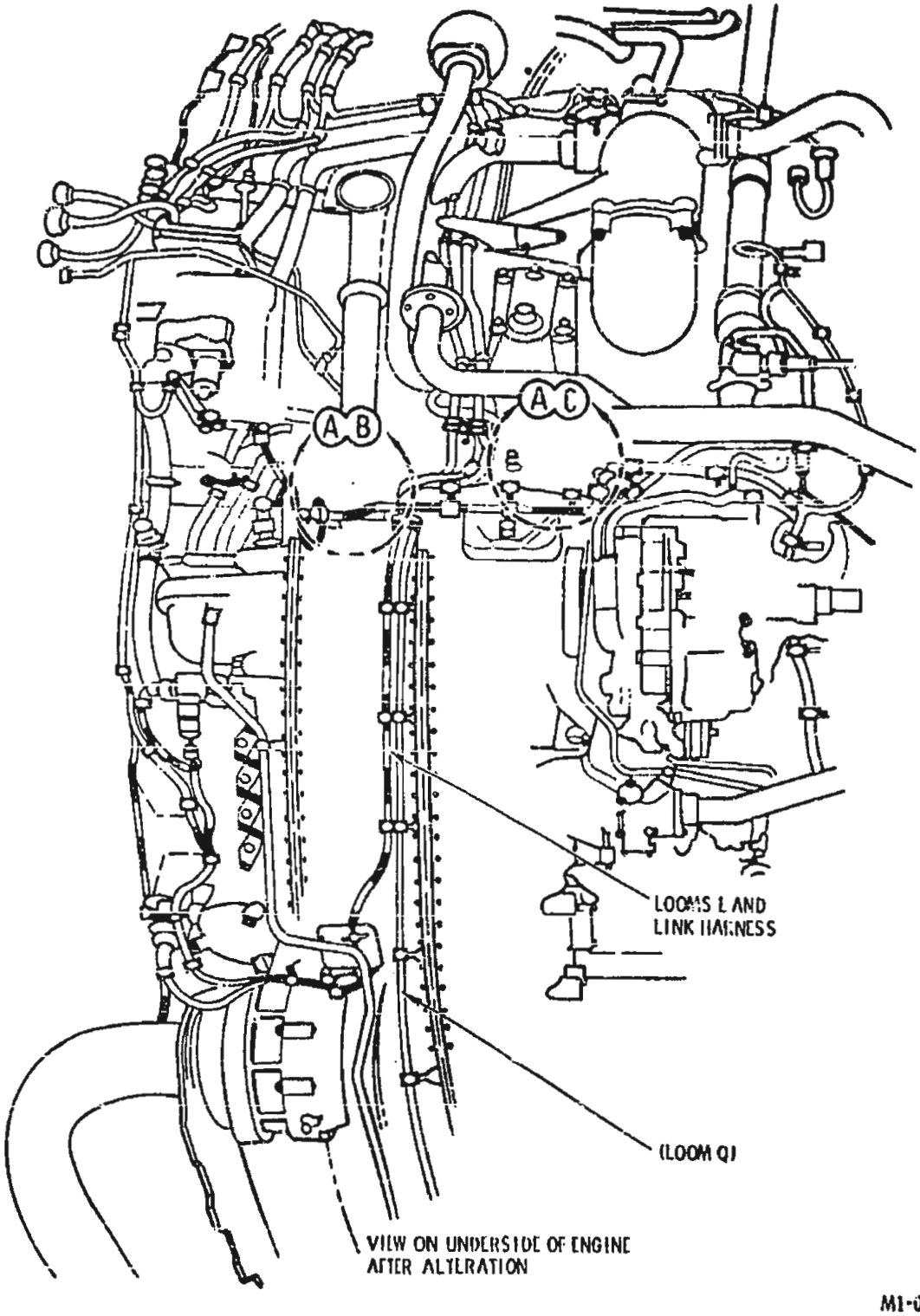
CR 1. L1011-RB211 High Speed Gearbox Fire Detection and Zone Overheat
CR Loom Assembly Modification (See Figure 201)

CR A. When an engine is to be installed in the NBR 2 position, the
CR following must be accomplished to accommodate the engine oil
CR remote servicing system (Ref. Figure 201, View AB and AC).

CR (1) Remove bolt/clip/spacer from gearbox fire detector loop
CR (CP 1441) at gearbox flange forward on L.H. mount.
CR Leave stand off bracket attached to the gearbox.
CR Retain removed parts for re-installation on a number 1,
CR 3 engine position (Ref. Figure 202).

CR (2) At clipping point 1440, install bushing, TWA Stk. Nbr.
CR 43-1391. Replace BIHEX bolt with AS21536 bolt, TWA
CR Stk. Nbr. 60-4191 (Ref. View AB, Figure 202).

CR (3) At clipping point 1446, install clip 400WSS8 above
CR UP10480 spacer. Arrange AS21424 bolt/K8831
CR washer/400WSS3 clip/400WSS8 clip/UP10480 spacer/UP10479
CR spacer/UL20033 bracket/AS41104 nut in order as detailed
CR in View AC, (Ref. Figure 203 and 204).



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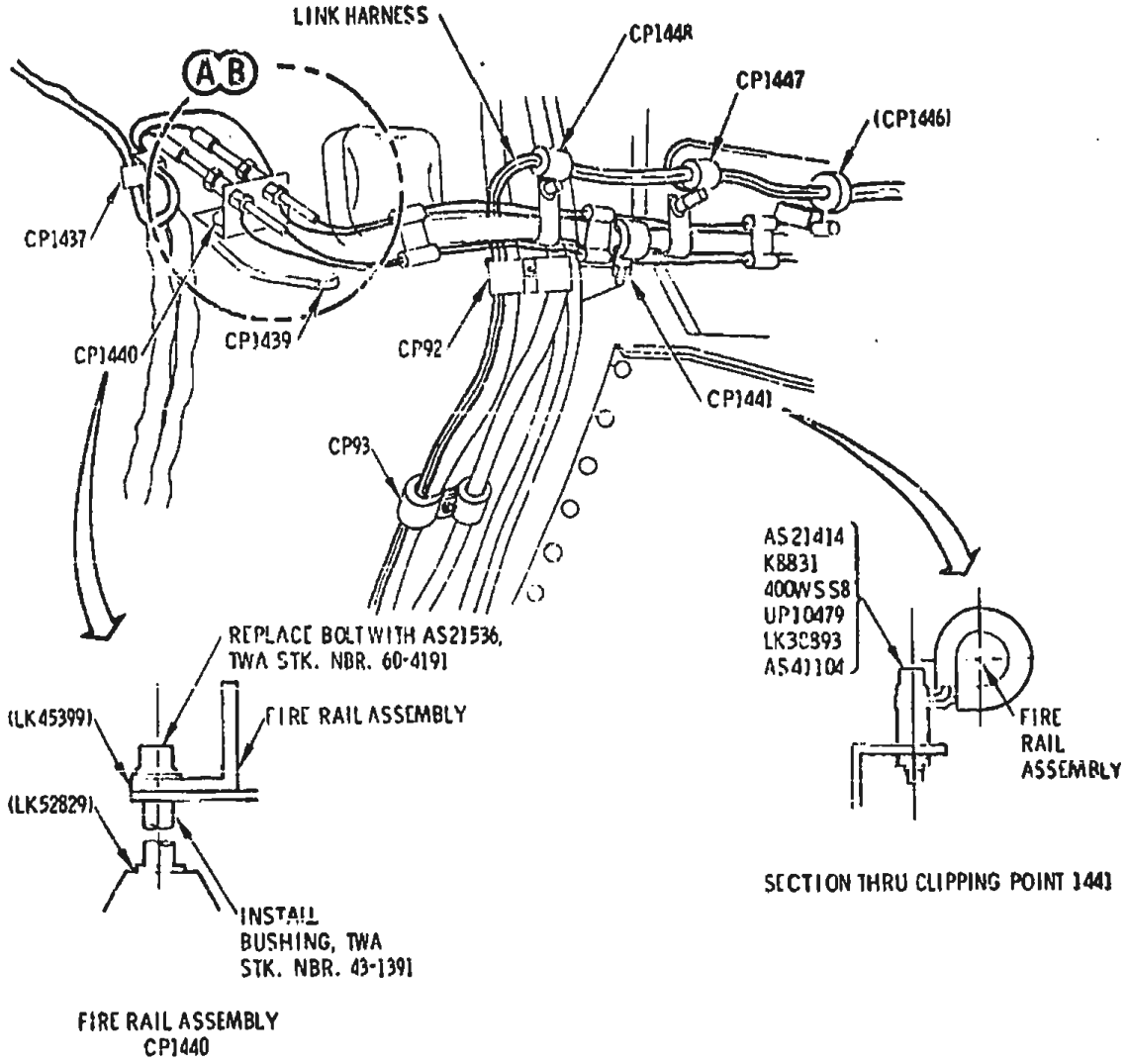
CR NBR 2 Engine Position Fire Detection and Zone Overheat Loom Assembly
CR Figure 201

R EFFECTIVITY: ALL
R
001B



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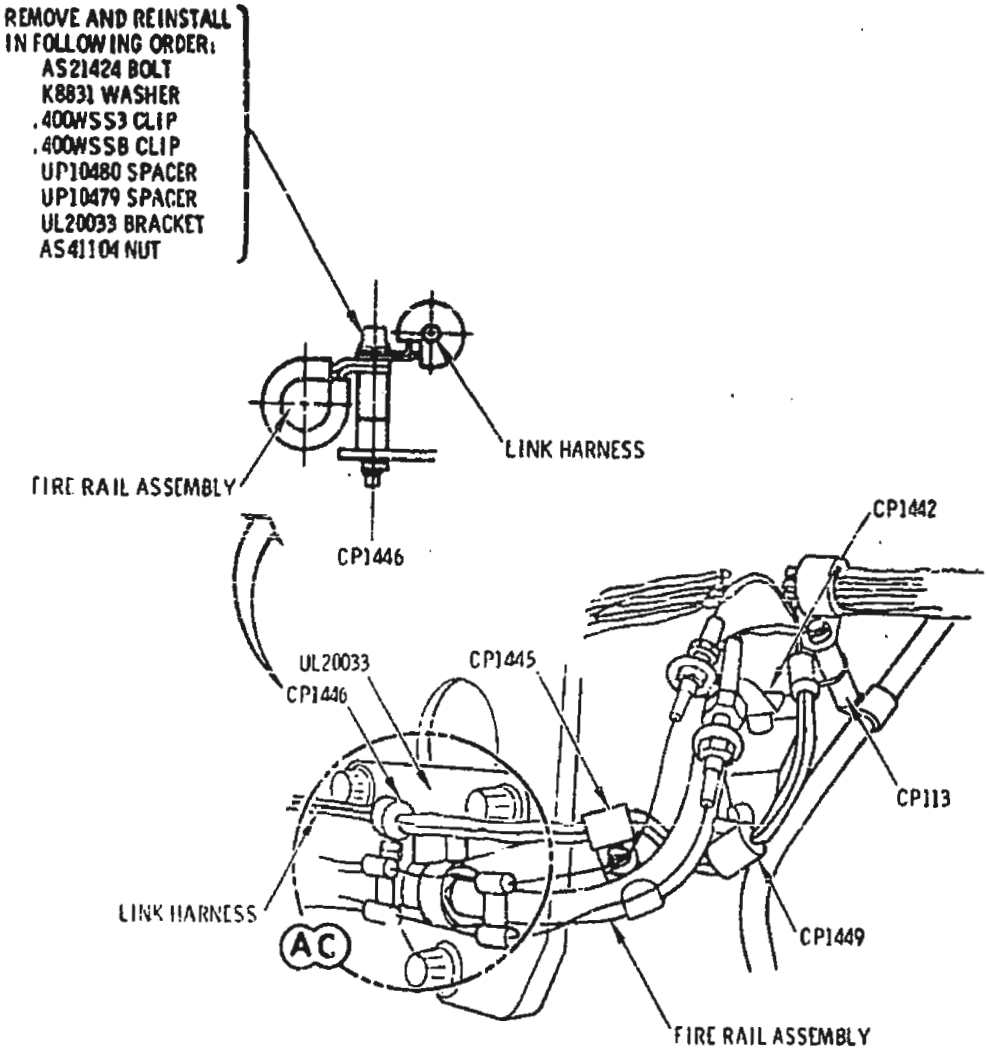
CR
CR

NBR 2 Engine Position - View at AB
Figure 202

R EFFECTIVITY: ALL
R
0018



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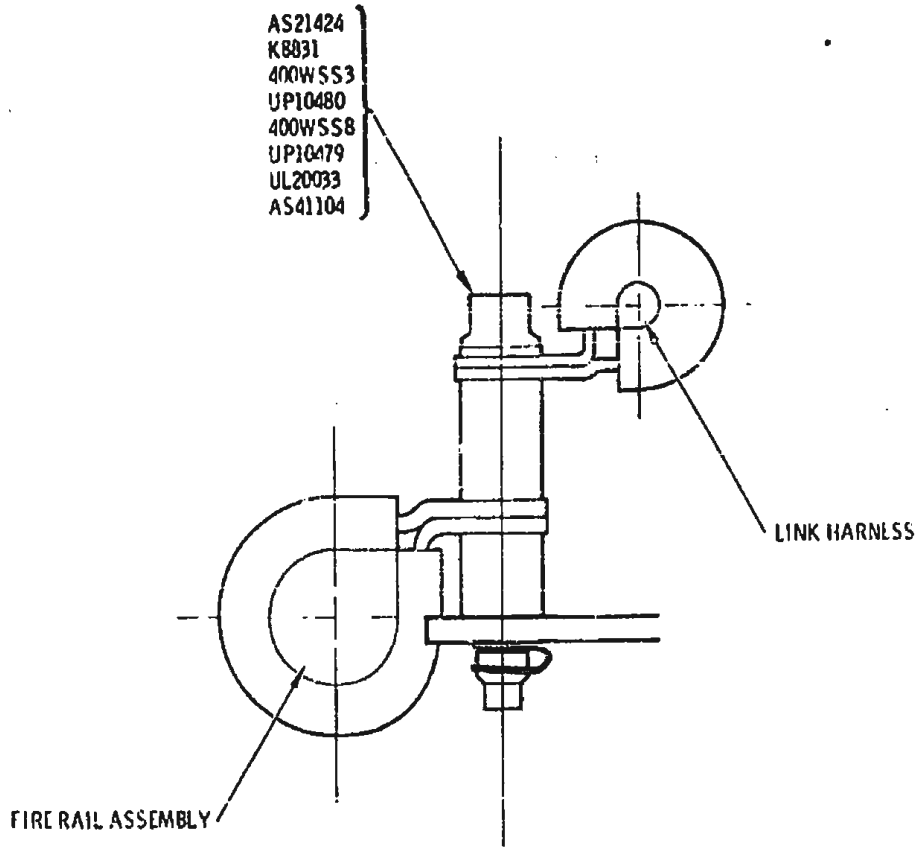
CR
CR

NBR 2 Engine Position - View at AC
Figure 203

R EFFECTIVITY: ALL
R
001B



SECTION THRU CLIPPING POINT 1446

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CR NBR 1 and 3 Engine Positions - Clipping Point 1446 - Reference only
CR Figure 204

R EFFECTIVITY: ALL
R
001B

ENGINE GEARCASE SENSOR ASSEMBLY - REMOVAL AND INSTALLATION

R 1. General

R Removal and installation procedures for the sensor assembly on
R each engine are identical except for access to the assembly.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.032-inch diameter (British gauge 22 SWG), or equivalent

Copper Gaskets, Walter Kidde

Protective Caps

DC-4 Silicone Grease

3. Referenced Procedures

26-11-00	Fire Detection System - Adjustment and Test
71-11-00	Engines No. 1 and No. 3 Cowling - Servicing
71-12-01	LH and RH Lower Hinged Cowls - Servicing

4. Removal/Installation (Sensor Loom Running Radially Along Gearcase)

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE DETECTION - LOOP A ALARM (K1, K2, K3), and LOOP B ALARM (K5, K6, K7) for particular engine.

(2) Open left hinged cowl 413A or 423A for engines No. 1 and 3 (Ref. 71-11-00, Servicing) or 433AL for engine No. 2 (Ref. 71-12-01, Servicing). Open right hinged cowl 414A or 424A for engines No. 1 and 3 (Ref. 71-11-00, Servicing) or 434AR for engine No. 2 (Ref. 71-12-01, Servicing).

CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING. DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE BASED SOLVENTS.

(3) Disconnect electrical connectors (1) from each end of sensing element and discard gaskets (2) (Ref. Fig. 401).

(4) Install protective caps on electrical connectors.

CAUTION: AVOID DAMAGING THE SENSING ELEMENTS.

(5) Support sensor assembly and release quick release fasteners (3) through (8), then carefully remove sensor assembly (9) from engine.

B. Installation

(1) Verify that circuit breakers opened in Step 4A(1) are open and tagged.

CAUTION: AVOID DAMAGING THE SENSING ELEMENTS.

(2) Refer to Figure 401, carefully position sensor assembly (9) on brackets around LP compressor case and high-speed external gearbox, then secure quick release fasteners (3) through (8).

(3) Remove protective caps from electrical connectors.

CAUTION: ENSURE NEW GASKETS ARE INSTALLED WHENEVER SENSOR ASSEMBLY IS DISCONNECTED.

ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE BASED SOLVENTS.

(4) Install new copper gaskets at each electrical connector as follows:

(a) Ensure that all parts are free of dirt, oil, and moisture.

(b) Apply a light coat of DC-4 Silicone Grease to the copper gasket. Avoid getting grease in the connector cavity or on the connector contacts.

(c) Slide gasket over sleeve of swivel nut end of sensing element.

(d) Ensure that the socket receptacle has a gasket between the socket shell and the barrel.

(e) Assemble pin and socket connector.

CAUTION: IN TORQUING THE CONNECTION, DO NOT TWIST THE TWO CONNECTORS.

(f) Torque connection 60 ± 10 lb in.

CAUTION: DO NOT TWIST THE TWO CONNECTORS WHEN TIGHTENING.

(5) Lock-wire electrical connectors.

(6) Close circuit breakers opened in Step 4A(1).

(7) Verify operation of fire detection system (Ref. 26-11-00).

(8) Close left hinged cowl 413A or 423A for engines No. 1 and 3 (Ref. 71-11-00, Servicing) or 433AL for engine No. 2 (Ref. 71-12-01, Servicing). Close right hinged cowl 414A or 424A for engines No. 1 and 3 (Ref. 71-11-00, Servicing) or 434AR for engine No. 2 (Ref. 71-12-01, Servicing).

R 5. Removal/Installation (Sensor Loom Running Fore/Aft Along
R Gearcase)

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE DETECTION - LOOP A ALARM (K1, K2, K3), and LOOP B ALARM (K5, K6, K7) for particular engine.

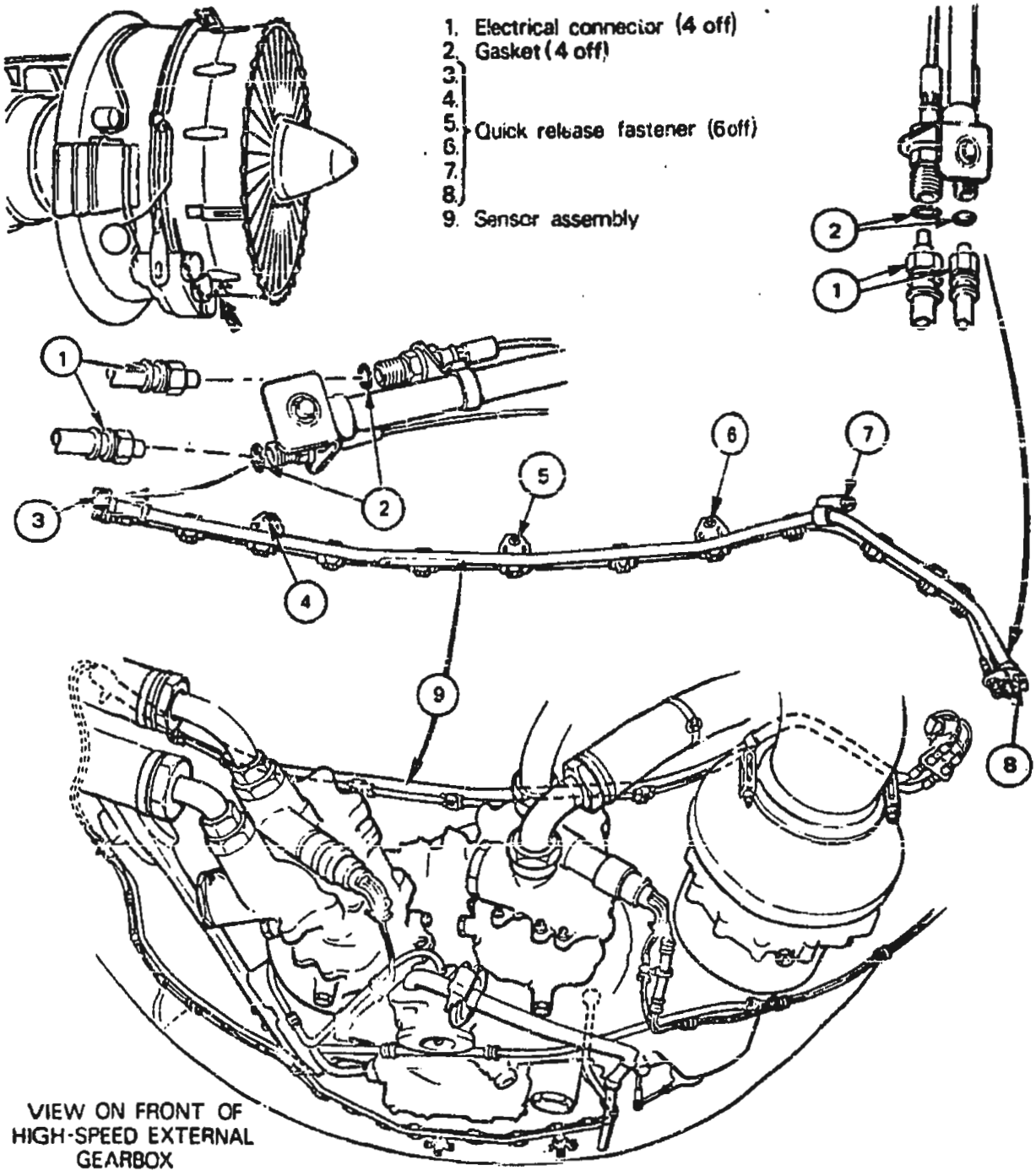
(2) Open left hinged cowl 413A or 423A for engines No. 1 and 3 (Ref. 71-11-00, Servicing) or 433AL for engine No. 2 (Ref. 71-12-01, Servicing). Open right hinged cowl 414A or 424A for engines No. 1 and 3 (Ref. 71-11-00, Servicing) or 434AR for engine No. 2 (Ref. 71-12-01, Servicing).

CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING. DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE BASED SOLVENTS.

(3) Disconnect electrical connectors (1) from each end of sensing element and discard gaskets (2) (Ref. Fig. 402).

(4) Install protective caps on electrical connectors.

CAUTION: AVOID DAMAGING THE SENSING ELEMENTS.



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R Engine Gearcase Sensor Assembly
R (Running Radially Along Gearcase) - Removal and Installation
R Figure 401

EFFECTIVITY: ALL

(5) Support sensor assembly and remove retaining bolts (3) to (9) and carefully remove sensor assembly (10) from engine.

B. Installation

(1) Verify that circuit breakers opened in Step 5A(1) are opened and tagged.

CAUTION: AVOID DAMAGING THE SENSING ELEMENTS.

(2) Carefully position sensor assembly (10) onto the engine gearcase and install retaining nuts (9) to (3) [(Ref. Fig. 402)].

(3) Remove protective caps from electrical connectors.

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO
R NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

(4) Ensure electrical connectors are free from dirt, oil and moisture then install a new gasket (2) on each connector.

NOTE: Apply a light coat of DC-4 Silicone Grease to the copper gaskets. Avoid getting grease in the connector cavity or on the connector contacts.

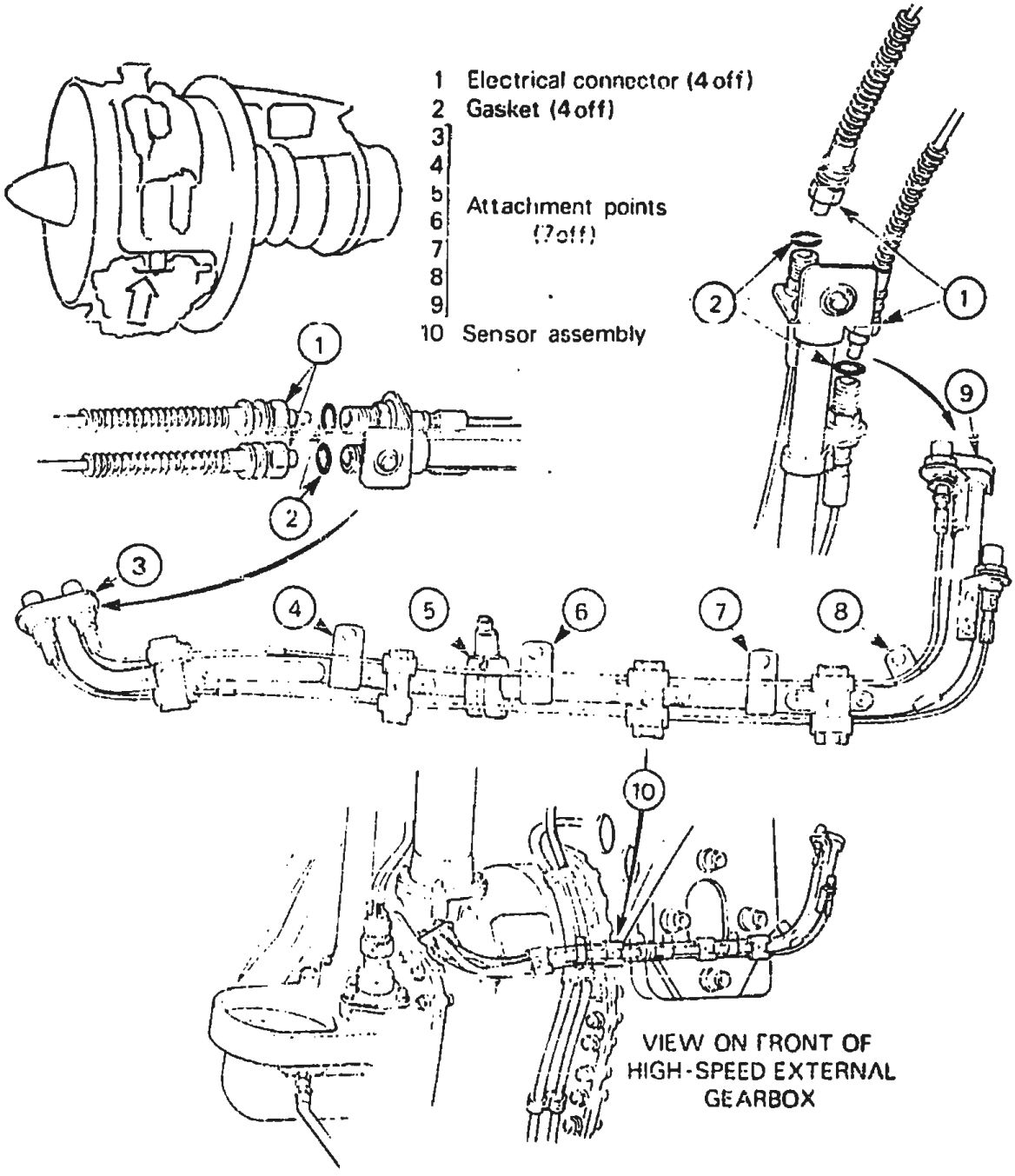
R CAUTION: DO NOT TWIST THE TWO CONNECTORS WHEN TORQUE
R TIGHTENING.

(5) Connect electrical connectors (1); torque tighten 50 to 70 lb-in. (5.7 to 6.8 Nm) and lockwire.

(6) Close circuit breakers opened in Step 5A(1).

(7) Verify operation of fire detection system (Ref. 26-11-00).

(8) Close hinged cowls opened in Step 5A(2).



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Engine Gearcase Sensor Assembly
(Running Fore/Aft Along Gearcase) - Removal and Installation
Figure 402

ENGINE GEARCASE SENSOR ASSEMBLY - INSPECTION AND CHECK

1. Equipment and Materials

Ohmmeter, Simpson PN 362, or equivalent

Ohmmeter leads (one lead terminating with Walter Kidde plug PN 876635 and one terminating with Walter Kidde plug PN 876633, with protective caps covering plugs)

Copper Gaskets, Walter Kidde

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

R DC-4 Silicone Grease

2. Referenced Procedures

26-11-00	Fire Detection System - Adjustment and Test
71-11-00	Engines No. 1 and No. 3 Cowling - Servicing
71-12-01	LH and RH Lower Hinged Cowl - Servicing

3. Inspection/Check

A. Sensor Element Resistance Check

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE DETECTION - LOOP A ALARM (K1, K2, K3) and LOOP B ALARM (K5, K6, K7) for particular engine.

(2) Open left hinged cowl 413A for engine No. 1, 423A for engine No. 3 (Ref. 71-11-00), or 433AL for engine No. 2 (Ref. 71-12-01).

(3) Open right hinged cowl 414A for engine No. 1, 424A for engine No. 3 (Ref. 71-11-00), or 434AR for engine No. 2 (Ref. 71-12-01).

CAUTION: DO NOT NICK OR SCRATCH CONNECTOR INTERFACE OR

SEALING SURFACES.

ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING. DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE BASED SOLVENTS.

(4) Disconnect electrical connector at each end of sensor element. Remove protective caps from ohmmeter leads and install on cable connectors.

(5) Use ohmmeter to measure resistance from center terminal of connector at one end of sensor to the center terminal of connector at other end of sensor.

Sensor running radially - allowable resistance is 4.1 ohms maximum.

On engines with RR SB72-8138, sensor running fore and aft - allowable resistance is 1.8 ohms maximum.

(6) Use ohmmeter to verify that there is no short between center contact of either connector and shell of sensor.

(7) Remove ohmmeter and leads.

R (8) Remove protective caps from cable connectors and
R install on ohmmeter leads.

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO
R NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

R (9) Ensure connectors are free from dirt, oil, and
R moisture; then fit a new gasket at each connector.

R NOTE: Apply a light coat of DC-4 Silicone Grease to
R the copper gaskets. Avoid getting grease in the
R connector cavity or on the connector contacts.

R CAUTION: DO NOT TWIST THE TWO CONNECTORS WHEN TORQUE
R TIGHTENING.

R (10) Connect electrical connectors and torque tighten to a
R value of 50 to 70 lb.-in., then lockwire.

R (11) Close circuit breakers opened in Step (1).

R (12) Verify operation of fire detection system (Ref.
R 26-11-00).

R (13) Close left and right hinged cowls.

ENGINE EJECTOR SENSOR ASSEMBLY - REMOVAL AND INSTALLATION

1. General

Removal and installation procedures for the sensor assembly on each engine is identical except for access to the assembly.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.032-inch diameter (British gauge 22 SWG), or equivalent

Copper Gaskets, Walter Kidde

Protective Caps

DC-4 Silicone Grease

3. Referenced Procedures

26-11-00	Fire Detection System - Adjustment and Test
71-11-00	Engines No. 1 and No. 3 Cowling - Servicing
71-12-01	LH and RH Lower Hinged Cowls - Servicing

4. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE DETECTION - LOOP A ALARM (K1, K2, K3) and LOOP B ALARM (K5, K6, K7) for particular engine.

(2) Open right hinged cowl 414A or 424A for engines No. 1 and 3 (Ref. 71-11-00) or 434AR for engine No. 2 (Ref. 71-12-01).

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING.
R DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

(3) Disconnect electrical connectors (1) from each end of sensing element and discard gaskets (2) (Ref. Fig. 401).

(4) Install protective caps on all electrical connectors.

CAUTION: AVOID DAMAGING THE SENSING ELEMENTS.

(5) Support sensor assembly and release quick release fasteners (3) through (10) then carefully remove sensor assembly (11) from engine.

B. Installation

(1) Verify that circuit breakers opened in Step 4A(1) are open and tagged.

CAUTION: AVOID DAMAGING THE SENSING ELEMENTS.

(2) Refer to Figure 401, carefully position sensor assembly (11) on brackets around engine firewall, IDG oil cooler and diffuser duct, fuel flow regulator box and HP compressor bleed valve control unit mounting bracket then secure quick release fasteners (3) through (10).

(3) Remove protective caps from electrical connectors.

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO
R NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

R ENSURE NEW GASKETS ARE INSTALLED WHENEVER SENSOR ASSEMBLY IS DISCONNECTED.

(4) Install new copper gaskets at each electrical connector as follows:

R (a) Ensure that all parts are free of dirt, oil, and moisture.

(b) Apply a light coat of DC-4 Silicone Grease to the copper gasket. Avoid getting grease in the connector cavity or on the connector contacts.

(c) Slide gasket over sleeve of swivel nut end of sensing element.

R (d) Ensure that the socket receptacle has a gasket between the socket shell and the barrel.

(e) Assemble pin and socket connector.

CAUTION: IN TORQUING THE CONNECTION, DO NOT TWIST THE TWO CONNECTORS.

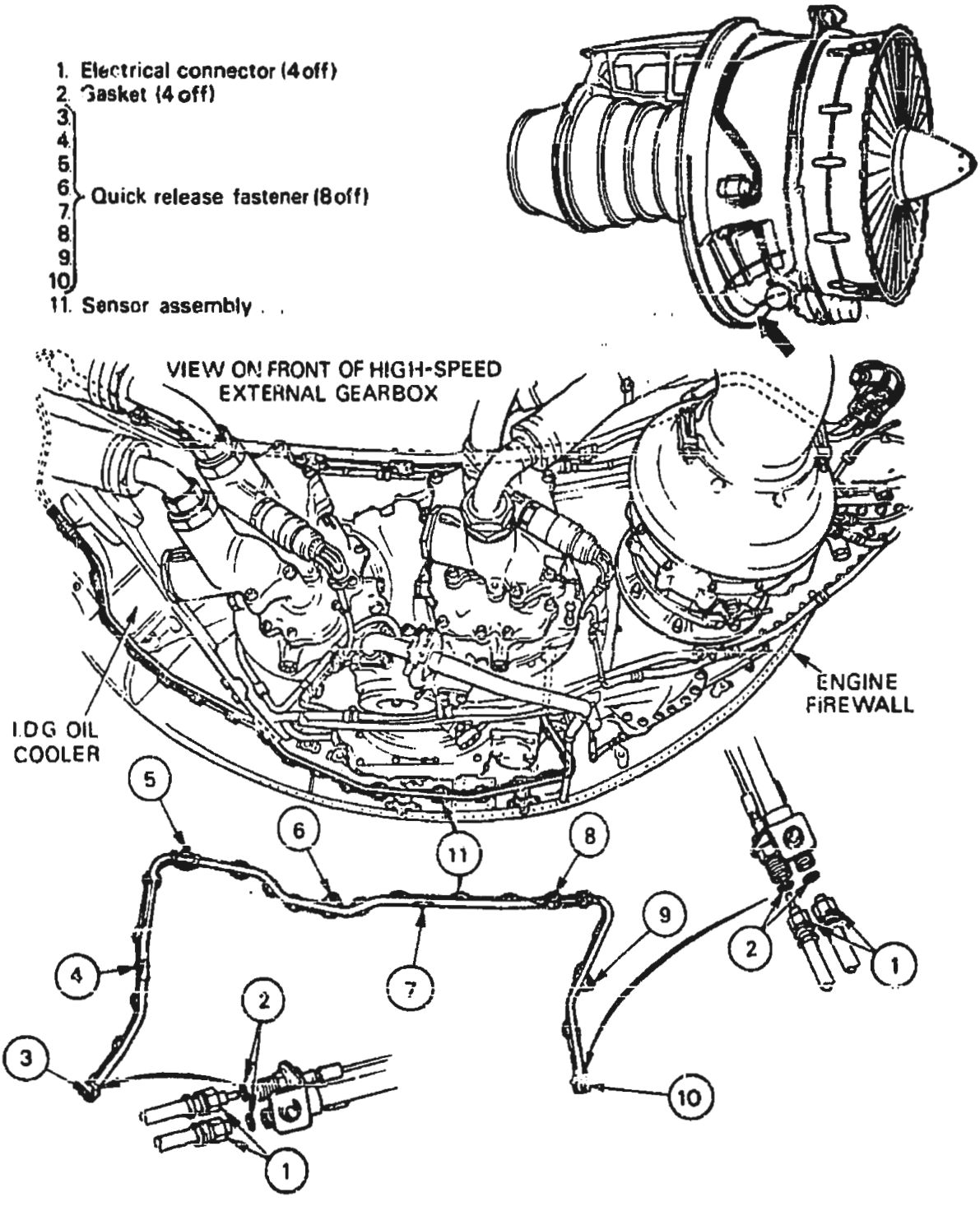
(f) Torque connection 60 ± 10 lb in.

(5) Lock-wire electrical connectors.

(6) Close circuit breakers opened in Step 4A(1).

(7) Verify operation of fire detection system (Ref. 26-11-00).

(8) Close right hinged cowl 414A or 424A for engines No. 1 and 3 (Ref. 71-11-00) or 434AR for engine No. 2 (Ref. 71-12-01).



M1-0103-26-061

Engine Ejector Sensor Assembly - Removal and Installation
Figure 401

ENGINE EJECTOR SENSOR ASSEMBLY - INSPECTION AND CHECK

1. Equipment and Materials

Ohmmeter, Simpson PN 362, or equivalent

Ohmmeter leads (one lead terminating with Water Kidde plug PN 876635 and one terminating with Walter Kidde plug PN 876633, with protective caps covering plugs)

Copper Gaskets, Walter Kidde

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

R DC-4 Silicone Grease

2. Referenced Procedures

26-11-00	Fire Detection System - Adjustment and Test
71-11-00	Engines No. 1 and No. 3 Cowling - Servicing
71-12-01	LH and RH Lower Hinged Cowl - Servicing

3. Inspection/Check

A. Sensor Element Resistance Check

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE DETECTION - LOOP A ALARM (K1, K2, K3) and LOOP B ALARM (K5, K6, K7) for particular engine.

(2) Open right hinged cowl 414A for engines No. 1, 424A for engine No. 3 (Ref. 71-11-00), or 434AR for engine No. 2 (Ref. 71-12-01).

CAUTION: DO NOT NICK OR SCRATCH CONNECTOR INTERFACE OR SEALING SURFACES.

R ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING.
R DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

(3) Disconnect electrical connector at each end of sensor element. Remove protective caps from ohmmeter leads and install on cable connectors.

(4) Use ohmmeter to measure continuity from center terminal of connector at one end of sensor to the center terminal of connector at other end of sensor maximum resistance 6.8 ohms.

(5) Use ohmmeter to verify that there is no short between center contact of either connector and shell of sensor.

(6) Remove ohmmeter and leads.

(7) Remove protective caps from cable connectors and install on ohmmeter leads.

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO
R NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

R DO NOT TWIST THE TWO CONNECTORS WHEN TORQUE
R TIGHTENING.

(8) Connect cable at each end of sensor using new copper gaskets. Torque connectors 60 ± 10 lb in. Lock-wire connectors.

R NOTE: Apply a light coat of DC-4 Silicone Grease to
R the copper gaskets. Avoid getting grease in the
R connector cavity or on the connector contacts.

(9) Close circuit breakers opened in Step (1).

(10) Verify operation of fire detection system (Ref. 26-11-00).

(11) Close right hinged cowls.

ENGINE HORIZONTAL FIREWALL SENSOR ASSEMBLY REMOVAL AND INSTALLATION

1. General

Removal and installation procedures for the sensor assembly on each engine are identical except for access to the assembly.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.032-inch diameter (British gauge 22 SWG), or equivalent

Copper Gaskets, Walter Kidde

DC-4 Silicone Grease

Protective caps

3. Referenced Procedures

26-11-00	Fire Detection System - Adjustment and Test
71-11-00	Engines No. 1 and No. 3 Cowling - Servicing
71-12-01	LH and RH Lower Hinged Cowls - Servicing

4. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE DETECTION - LOOP A ALARM (K1, K2, K3) and LOOP B ALARM (K5, K6, K7) for particular engine.

(2) Open left hinged cowl 413A or 423A for engines No. 1 and 3 (Ref. 71-11-00) or 433DL for engine No. 2 (Ref. 71-12-01). Open right hinged cowl 414A or 424A for engines No. 1 and 3 (Ref. 71-11-00 or 434DR for engine No. 2 (Ref. 71-12-01, Servicing).

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING.
R DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

(3) Disconnect electrical connectors (1) from each end of sensor element and discard gasket (2) (Ref. Fig. 401).

(4) Install protective caps on all electrical connectors.

CAUTION: AVOID DAMAGING THE SENSING ELEMENTS.

(5) Support sensor assembly and release quick release fasteners (3) through (6) then carefully remove sensor assembly (7) from engine.

B. Installation

(1) Verify that circuit breakers opened in Step 4A(1) are open and tagged.

CAUTION: AVOID DAMAGING THE SENSING ELEMENTS.

(2) Refer to Figure 401, carefully position sensor assembly (7) on brackets around LP compressor case and highspeed external gearbox, then secure quick release fasteners (3) through (6).

(3) Remove protective caps from electrical connectors.

R CAUTION: ENSURE NEW GASKETS ARE INSTALLED WHENEVER SENSOR ASSEMBLY IS DISCONNECTED.

R ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO
R NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

DO NOT TWIST THE TWO CONNECTORS WHEN TIGHTENING.

(4) Install new copper gaskets at each electrical connector as follows:

R (a) Ensure that all parts are free of dirt, oil, and moisture.

(b) Apply a light coat of DC-4 Silicone Grease to the copper gasket. Avoid getting grease in the connector cavity or on the connector contacts.

(c) Slide gasket over sleeve of swivel nut end of sensing element.

(d) Insure that the socket receptacle has a gasket between the socket shell and the barrel.

(e) Assemble pin and socket connector.

CAUTION: IN TORQUING THE CONNECTION, DO NOT TWIST THE TWO CONNECTORS.

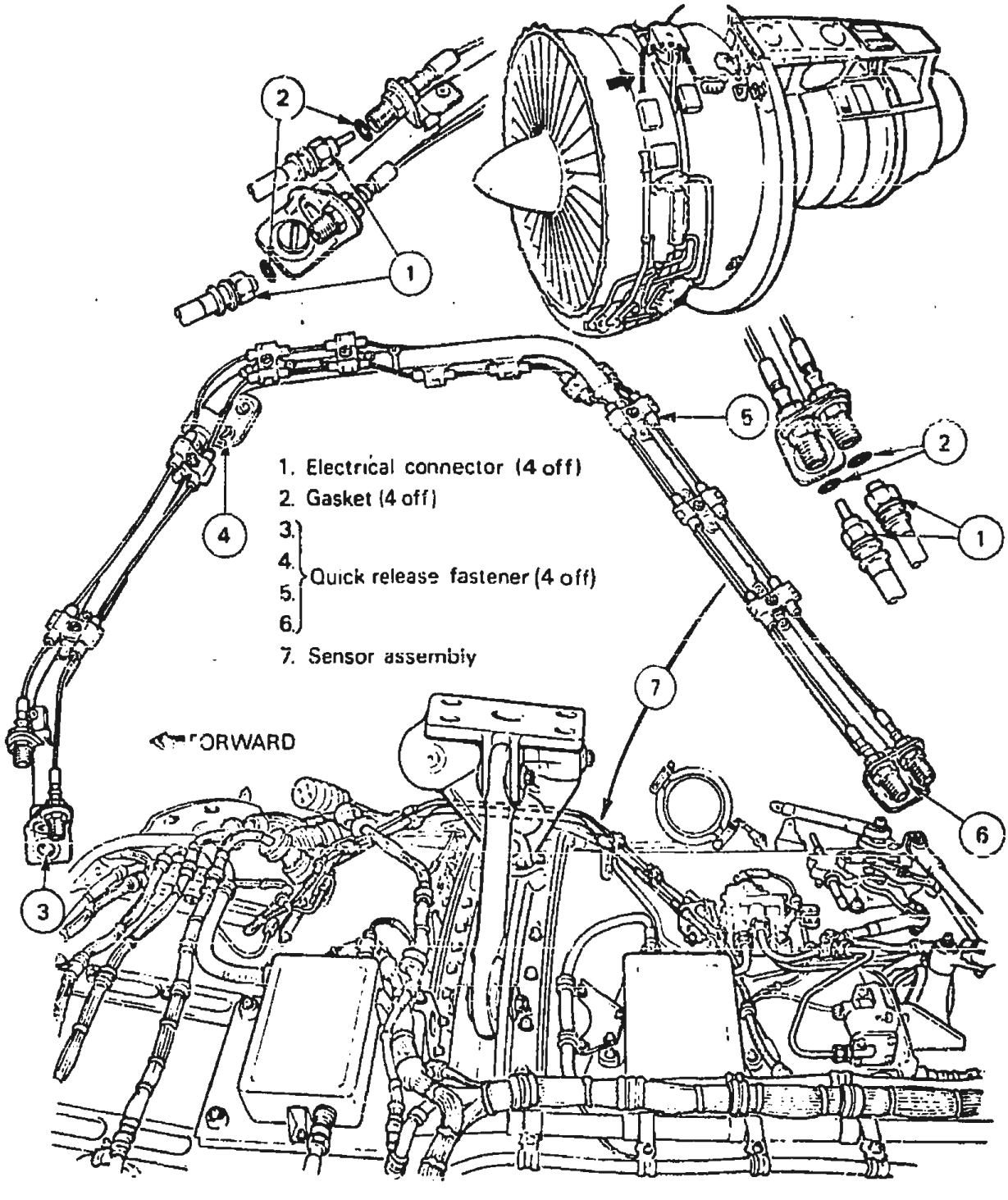
(f) Torque connection 60 ± 10 lb in.

(5) Lock-wire electrical connectors.

(6) Close circuit breakers opened in Step 4A(1).

(7) Verify operation of fire detection system (Ref. 26-11-00).

(8) Close left hinged cowl 413A or 423A for engines No. 1 and 3 (Ref. 71-11-00) or 433DL for engine No. 2 (Ref. 71-12-01). Close right hinged cowl 414A or 424A for engines No. 1 and 3 (Ref. 71-11-00) or 434DR for engine No. 2 (Ref. 71-12-01).



M1–0103–26–062

R Engine Horizontal Firewall Sensor Assembly
R Removal and Installation
R Figure 401

ENGINE HORIZONTAL FIREWALL SENSOR ASSEMBLY - INSPECTION AND CHECK

1. Equipment and Materials

Ohmmeter, Simpson PN 362, or equivalent

Ohmmeter leads (one lead terminating with Walter Kidde plug PN 876635 and one terminating with Walter Kidde plug PN 876633, with protective caps covering plugs)

Copper Gaskets, Walter Kidde

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

R DC-4 Silicone Grease

2. Referenced Procedures

26-11-00	Fire Detection System - Adjustment and Test
71-11-00	Engines No. 1 and No. 3 Cowling - Servicing
71-12-01	LH and RH Lower Hinged Cowl - Servicing

3. Inspection/Check

A. Sensor Element Resistance Check

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE DETECTION - LOOP A ALARM (K1, K2, K3) and LOOP B ALARM (K5, K6, K7) for particular engine.

(2) Open left hinged cowl 413A for engine No. 1, 423A for engine No. 3 (Ref. 71-11-00), or 433AL for engine No. 2 (Ref. 71-12-01).

(3) Open right hinged cowl 414A for engine No. 1, 424A for engine No. 3 (Ref. 71-11-00), or 434AR for engine No. 2 (Ref. 71-12-01).

CAUTION: DO NOT NICK OR SCRATCH CONNECTOR INTERFACE OR

SEALING SURFACES.

R ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING.
R DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

(4) Disconnect electrical connector at each end of sensor element. Remove protective caps from ohmmeter leads and install on cable connectors.

(5) Set ohmmeter to LOW scale and use leads with special terminations to measure resistance from center contact of connector at one end of sensor to center contact of connector at other end of sensor. Allowable resistance is 3.6 ohms maximum.

(6) Use ohmmeter to verify that there is no short between center contact of either connector and shell of sensor.

(7) Remove ohmmeter and leads.

(8) Remove protective caps from cable connectors and install on ohmmeter leads.

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO
R NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

R DO NOT TWIST THE TWO CONNECTORS WHEN TORQUE
R TIGHTENING.

(9) Connect cable at each end of sensor using new copper gaskets. Torque connectors 60 ± 10 lb in. Lock-wire connectors.

R NOTE: Apply a light coat of DC-4 Silicone Grease to
R the copper gaskets. Avoid getting grease in the
R connector cavity or on the connector contacts.

(10) Close circuit breakers opened in Step (1).

(11) Verify operation of fire detection system (Ref. 26-11-00).

(12) Close left and right hinged cowls.

APU COMBUSTION ZONE SENSOR ASSEMBLY - MAINTENANCE PRACTICES

1. Referenced Procedure

   49-00-01 Auxiliary Power Unit - Maintenance Practices

2. Maintenance Practices

   A. Deactivation

      (1) Perform APU deactivation procedure (Ref. 49-00-01).

R   (2) Make appropriate entry in aircraft log book.

APU COMBUSTION ZONE SENSOR ASSEMBLY - REMOVAL AND INSTALLATION

1. Equipment and Materials

Copper Gaskets, Walter Kidde

R Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

2. Referenced Procedure

26-11-00 Fire Detection System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag the following circuit breakers:

FIRE DETECTION

MASTER ALARM PWR - WHL WELL - APU (J4)

TEST (J5)

FIREBELL PWR (J6)

APU FIRE SHUTDOWN (J7)

LOOP A ALARM - APU (K4)

LOOP B ALARM - APU (K8)

APU FIRE DETECT

ALARM - LOOP A (D16)

ALARM - LOOP B (D17)

FIRE EXTINGUISHER

APU FIRE SHUTDOWN (C18)

APU - MAIN (C16)

APU - ALTN (C17)

(2) On Flight Engineer/Second Officers APU CONTROL panel, zone 215, ensure that MASTER POWER switch is in the OFF position. Attach a Maintenance-in-Progress tag to the switch.

(3) At right side of APU compartment, unlatch APU hinged access doors 319BR and 319DR.

(4) Disconnect electrical connectors from each end of sensing elements (Ref. Fig. 401) and discard gaskets.

CAUTION: EXERCISE EXTREME CARE TO AVOID TWISTING, BENDING, KINKING, DENTING, OR OTHERWISE DAMAGING THE SENSING ELEMENTS.

(5) Unlock quick-release fasteners holding sensor support tube to mounting brackets and remove sensor assembly.

B. Installation

(1) Verify that circuit breakers opened in Step 3A(1) are open and tagged.

(2) Loosen clamp screws to allow clamps to slide on tube.

(3) Install sensor assembly on mounting brackets with quick-release fasteners.

CAUTION: EXERCISE EXTREME CARE TO AVOID TWISTING, BENDING, KINKING, DENTING, OR OTHERWISE DAMAGING THE SENSING ELEMENTS.

(4) Tighten all clamp screws.

R CAUTION: INSURE NEW GASKETS ARE USED WHEN EVER ASSEMBLY IS DISCONNECTED.

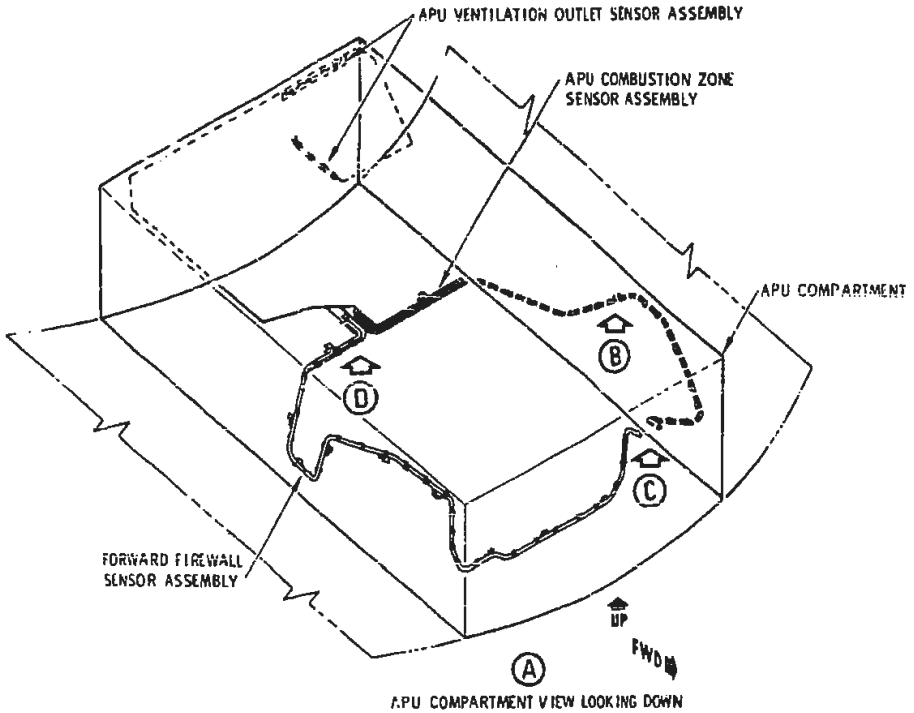
(5) Install new copper gaskets at each electrical connector as follows (Ref. Fig. 401):

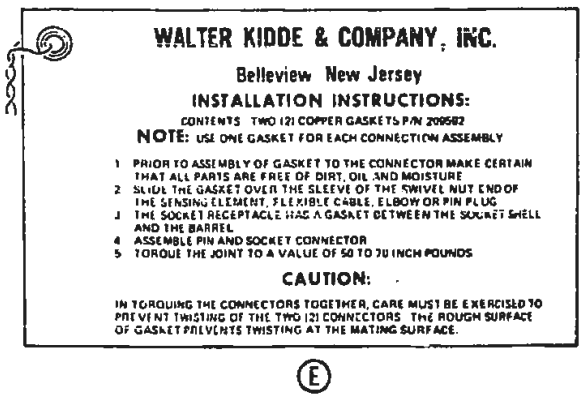
(a) Insure that all parts are free of dirt, oil, and moisture.

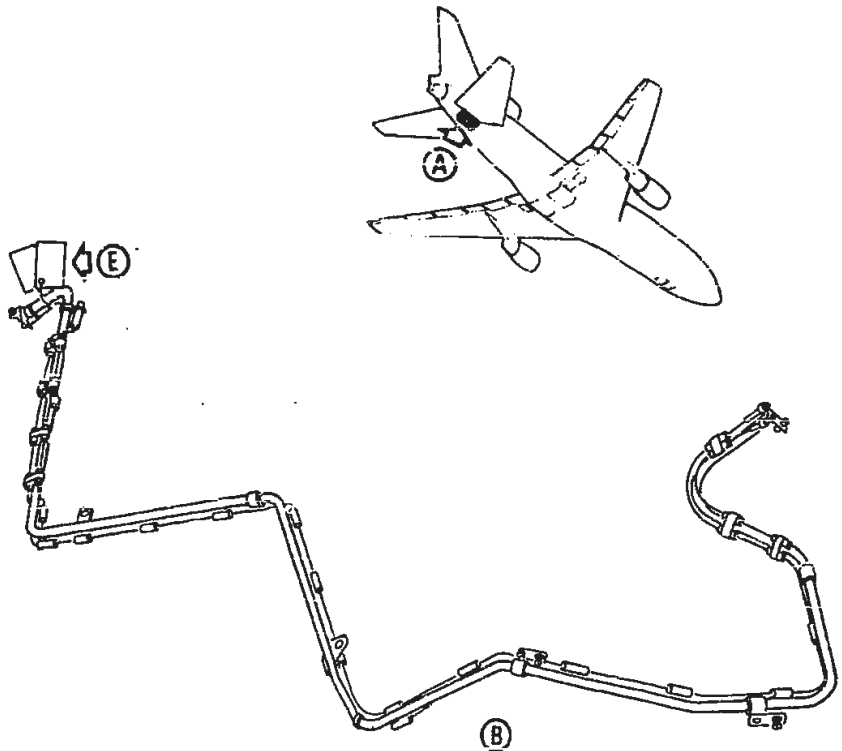
(b) Slide gasket over sleeve of swivel nut end of sensing element.

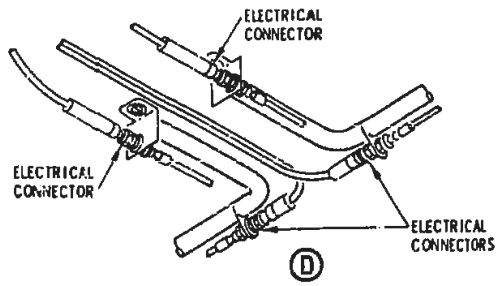
(c) Insure that the socket receptacle has a gasket between the socket shell and the barrel.

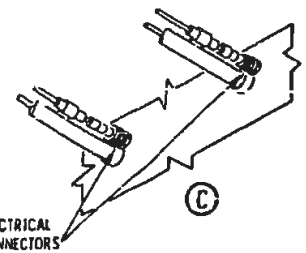
(d) Assemble pin and socket connector.




WALTER KIDDE & COMPANY, INC.
Belleview New Jersey
INSTALLATION INSTRUCTIONS:
CONTENTS TWO (2) COPPER GASKETS P/N 209582
NOTE: USE ONE GASKET FOR EACH CONNECTION ASSEMBLY
1 PRIOR TO ASSEMBLY OF GASKET TO THE CONNECTOR MAKE CERTAIN THAT ALL PARTS ARE FREE OF DIRT, OIL AND MOISTURE
2 SLIDE THE GASKET OVER THE SLEEVE OF THE SWIVEL NUT END OF THE SENSING ELEMENT, FLEXIBLE CABLE, ELBOW OR PIN PLUG
3 THE SOCKET RECEPTACLE HAS A GASKET BETWEEN THE SOCKET SHELL AND THE BARREL
4 ASSEMBLE PIN AND SOCKET CONNECTOR
5 TORQUE THE JOINT TO A VALUE OF 50 TO 70 INCH POUNDS
CAUTION:
IN TORQUING THE CONNECTORS TOGETHER, CARE MUST BE EXERCISED TO PREVENT TWISTING OF THE TWO (2) CONNECTORS. THE ROUGH SURFACE OF GASKET PREVENTS TWISTING AT THE MATING SURFACE.
E







M1-0103-26-029

R APU Combustion Zone Sensor - Removal and Installation
R Figure 401

EFFECTIVITY: ALL

001B

CAUTION: IN TORQUING THE CONNECTION, DO NOT TWIST THE TWO CONNECTORS.

(e) Torque connection 60 ± 10 lb in.

(6) Lock-wire electrical connectors.

(7) Close and secure access doors.

(8) Remove tags and close circuit breakers opened in Step 3A(1).

(9) Remove tag installed in Step 3A(2).

(10) Test APU fire detection system (Ref. 26-11-00).

APU COMBUSTION ZONE SENSOR ASSEMBLY - INSPECTION AND CHECK

1. Equipment and Materials

Ohmmeter, Simpson PN 362, or equivalent

Ohmmeter leads (one lead terminating with Walter Kidde plug PN 876635 and one terminating with Walter Kidde plug PN 876633, with protective caps covering plugs)

Copper Gaskets, Walter Kidde PN 209592, no equivalent

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

2. Referenced Procedure

R 6-40-00 Exterior Access Doors and Panels

26-11-00 Fire Detection System - Adjustment and Test

3. Inspection/Check

A. Sensor Element Resistance Check

R (1) On FE/SO aft circuit breaker panel CB3, zone 215, open and tag circuit breaker APU POWER - BAT - PWR (B10).

On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breaker FIRE DETECTION - MASTER ALARM PWR - WHL WELL - APU (J4).

R R (2) Open APU hinged access doors 319BR and 319DR Zone 300 (Ref. 6-40-00).

R CAUTION: DO NOT NICK OR SCRATCH CONNECTOR INTERFACE OR SEALING SURFACES.

R (3) Disconnect electrical connector at each end of sensor element.

R R (4) Remove protective caps from ohmmeter leads and install on cable connectors.

R (5) Set ohmmeter to HIGH scale.

R R (6) Using leads with special terminations measure resistance through center contact of sensor.

R NOTE: Allowable resistance is 9.1 ohms maximum.

R (7) Verify there is no short between center contact of
R either connector and shell of sensor.

R (8) Remove ohmeter and leads.

R (9) Remove protective caps from cable connectors and
R install on ohmmeter leads.

R (10) Connect cable at each end of sensor using new copper
R gaskets.

R (11) Torque connectors 60(±10) lb in.

R (12) Lock-wire connectors.

R (13) Close circuit breakers opened in Step 3A(1).

R (14) Close APU doors opened in Step 3A(2).

R (15) Perform APU fire detection system test procedure (Ref.
R 26-11-00).

APU FORWARD FIREWALL SENSOR ASSEMBLY - REMOVAL AND INSTALLATION

1. Equipment and Materials

R Copper Gaskets, Walter Kidde

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

2. Referenced Procedure

26-11-00 Fire Detection System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag the following circuit breakers:

R FIRE DETECTION

R MASTER ALARM PWR - WHL WELL - APU (J4)

R TEST (J5)

R FIREBELL PWR (J6)

R APU FIRE SHUTDOWN (J7)

R LOOP A ALARM - APU (K4)

R LOOP B ALARM - APU (K8)

R APU FIRE DETECT

R ALARM - LOOP A (D16)

R ALARM - LOOP B (D17)

R FIRE EXTINGUISHER

R APU FIRE SHUTDOWN (C18)

R APU - MAIN (C16)

R APU - ALTN (C17)

(2) On Flight Engineer/Second Officers APU CONTROL panel, zone 215, ensure that MASTER POWER switch is in the OFF position. Attach a Maintenance-in-Progress tag to the switch.

(3) At left side of APU compartment, unlatch hinged APU access doors 319AL and 319CL.

(4) Disconnect electrical connectors from each end of sensing element (Ref. Fig. 401) and discard gaskets.

CAUTION: EXERCISE EXTREME CARE TO AVOID TWISTING, BENDING, KINKING, DENTING, OR OTHERWISE DAMAGING THE SENSING ELEMENTS.

(5) Unlock quick-release fasteners holding sensor support tube to mounting brackets and remove sensor assembly.

B. Installation

(1) Verify that circuit breakers opened in Step 3A(1) are open and tagged.

(2) Loosen clamp screws to allow clamps to slide on the tube.

(3) Align and secure sensor mounting tube (Ref. Fig. 401).

CAUTION: EXERCISE EXTREME CARE TO AVOID TWISTING, BENDING, KINKING, DENTING, OR OTHERWISE DAMAGING THE SENSING ELEMENTS.

(4) Install sensor assembly on mounting bracket with quick-release fasteners.

(5) Tighten all clamp screws.

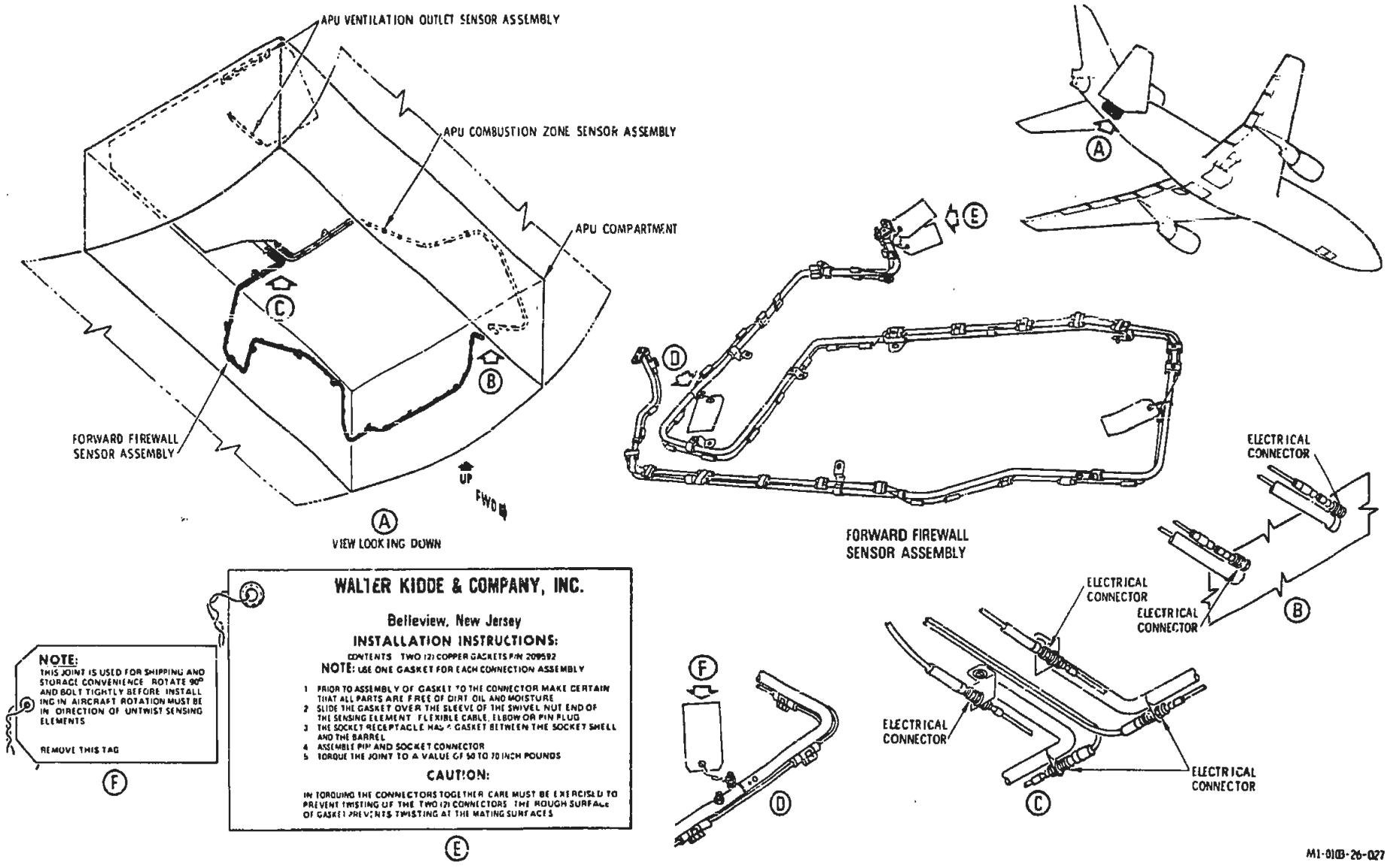
CAUTION: INSURE NEW GASKETS ARE USED WHENEVER ASSEMBLY IS DISCONNECTED.

(6) Install new copper gaskets at each electrical connector as follows (Fig. 401):

(a) Insure that all parts are free of dirt, oil, and moisture.

(b) Slide gasket over sleeve of swivel nut end of sensing element.

(c) Insure that the socket receptacle has a gasket between the socket shell and the barrel.


APU VENTILATION OUTLET SENSOR ASSEMBLY
APU COMBUSTION ZONE SENSOR ASSEMBLY
APU COMPARTMENT
FORWARD FIREWALL SENSOR ASSEMBLY
UP
FWD
A
VIEW LOOKING DOWN
FORWARD FIREWALL SENSOR ASSEMBLY
ELECTRICAL CONNECTOR
ELECTRICAL CONNECTOR
ELECTRICAL CONNECTOR
ELECTRICAL CONNECTOR
ELECTRICAL CONNECTOR
NOTE:
THIS JOINT IS USED FOR SHIPPING AND STORAGE CONVENIENCE ROTATE 90° AND BOLT TIGHTLY BEFORE INSTALLING IN AIRCRAFT ROTATION MUST BE IN DIRECTION OF UNTWIST SENSING ELEMENTS
REMOVE THIS TAG
F
WALTER KIDDE & COMPANY, INC.
Belleview, New Jersey
INSTALLATION INSTRUCTIONS:
CONTENTS TWO (2) COPPER GASKETS P/N 209592
NOTE: USE ONE GASKET FOR EACH CONNECTION ASSEMBLY
1 PRIOR TO ASSEMBLY OF GASKET TO THE CONNECTOR MAKE CERTAIN THAT ALL PARTS ARE FREE OF DIRT OIL AND MOISTURE
2 SLIDE THE GASKET OVER THE SLEEVE OF THE SWIVEL NUT END OF THE SENSING ELEMENT FLEXIBLE CABLE, ELBOW OR PIN PLUG
3 THE SOCKET RECEPTACLE HAS A GASKET BETWEEN THE SOCKET SHELL AND THE BARREL
4 ASSEMBLE PIN AND SOCKET CONNECTOR
5 TORQUE THE JOINT TO A VALUE OF 50 TO 70 INCH POUNDS
CAUTION:
IN TORQUING THE CONNECTORS TOGETHER CARE MUST BE EXERCISED TO PREVENT TWISTING OF THE TWO (2) CONNECTORS THE ROUGH SURFACE OF GASKET PREVENTS TWISTING AT THE MATING SURFACES
E
F
D
M1-0103-26-027

R APU Forward Firewall Sensor - Removal and Installation
R Figure 401

EFFECTIVITY: ALL

001B

(d) Assemble pin and socket connector.

R CAUTION: IN TORQUING THE CONNECTOR, DO NOT TWIST THE TWO(2) CONNECTORS.

(e) Torque connection 60 ± 10 lb in.

(7) Lock-wire electrical connectors.

(8) Close and secure access doors.

(9) Remove tags and close circuit breakers opened in Step 3A(1).

(10) Remove tag installed in Step 3A(2).

(11) Test APU fire detection system (Ref. 26-11-00).

APU FORWARD FIREWALL SENSOR ASSEMBLY - INSPECTION AND CHECK

1. Equipment and Materials

Ohmmeter, Simpson PN 362, or equivalent

Ohmmeter leads (one lead terminating with Walter Kidde plug PN 876635 and one terminating with Walter Kidde plug PN 876633, with protective caps covering plugs)

R Copper Gaskets, Walter Kidde

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

2. Referenced Procedure 26-11-00 Fire Detection System - Adjustment and Test

R 6-40-00 Exterior Access Doors and Panels

3. Inspection/Check

A. Sensor Element Resistance Check

R (1) On FE/SO aft circuit breaker panel CB3, zone 215, open and tag circuit breaker APU POWER - BAT - PWR (B10).

On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breaker FIRE DETECTION - MASTER ALARM PWR - WHL WELL - APU (J4).

R R (2) Open APU hinged access doors 319AL and 319CL zone 300 (Ref. 6-40-00).

R CAUTION: DO NOT NICK OR SCRATCH CONNECTOR INTERFACE AND SEALING SURFACES.

R (3) Disconnect electrical connector at each end of sensor element.

R R (4) Remove protective caps from ohmmeter leads and install on cable connectors.

R (5) Set ohmmeter to HIGH scale.

R R (6) Using leads with special terminations measure resistance through center contact of sensor.

R NOTE: Allowable resistance is 14.3 ohms maximum.

R (7) Verify there is no short between center contact of
R either connector and shell of sensor.

R (8) Remove ohmmeter and leads.

R (9) Remove protective caps from cable connectors and
R install on ohmmeter leads.

R (10) Connect cable at each end of sensor using new copper
R gaskets.

R (11) Torque connectors 60 (±10) lb in.

R (12) Lock-wire connectors.

R (13) Close circuit breakers opened in Step 3A(1).

R (14) Close APU access doors opened in Step 3A(2).

R (15) Perform APU fire system test procedure (Ref. 26-11-00).

FIRE DETECTOR CONTROL UNIT - REMOVAL AND INSTALLATION

1. General

Removal and installation procedures for all control units, located in the forward electronic service center, zone 113, (Ref. Fig. 401) are the same except for affected circuit breakers.

2. Referenced Procedure

26-11-00 Fire Detection System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) Before removing control unit for engine No. 1, open and tag the following circuit breakers:

On pilots overhead circuit breaker panel CB1, zone 210:

FIRE DETECTION - MASTER ALARM PWR - ENG 1 (J1)

FIRE DETECTION - TEST (J5)

FIRE DETECTION - FIREBELL PWR (J6)

FIRE DETECTION - LOOP A ALARM - ENG 1 (K1)

FIRE DETECTION - LOOP B ALARM - ENG 1 (K5)

(2) Before removing control unit for engine No. 2, open and tag the following circuit breakers:

On pilots overhead circuit breaker panel CB1, zone 210:

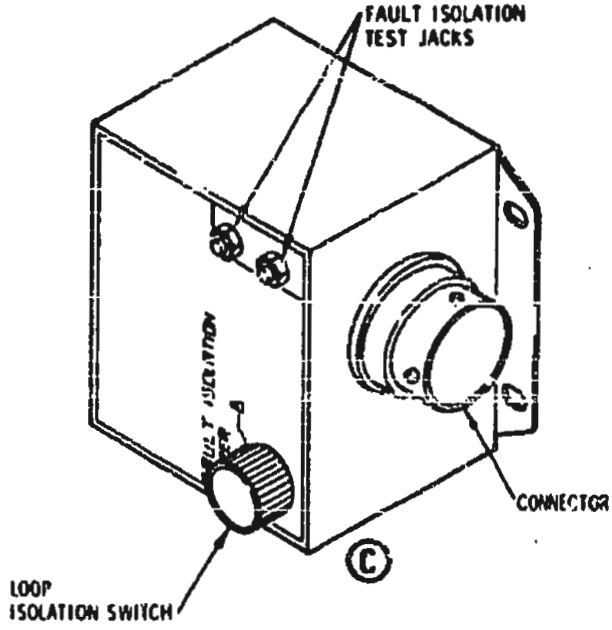
FIRE DETECTION - MASTER ALARM PWR - ENG 2 (J2)

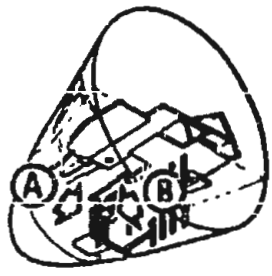
FIRE DETECTION - TEST (J5)

R FIRE DETECTION - FIREBELL PWR (J6)

FIRE DETECTION - LOOP A ALARM - ENG 2 (K2)

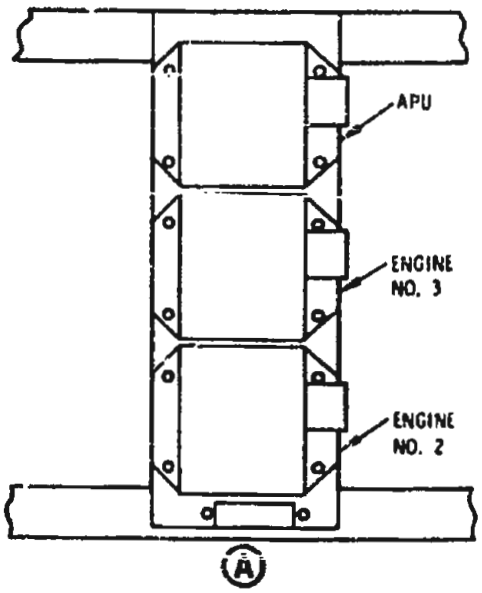
FIRE DETECTION - LOOP B ALARM - ENG 2 (K6)



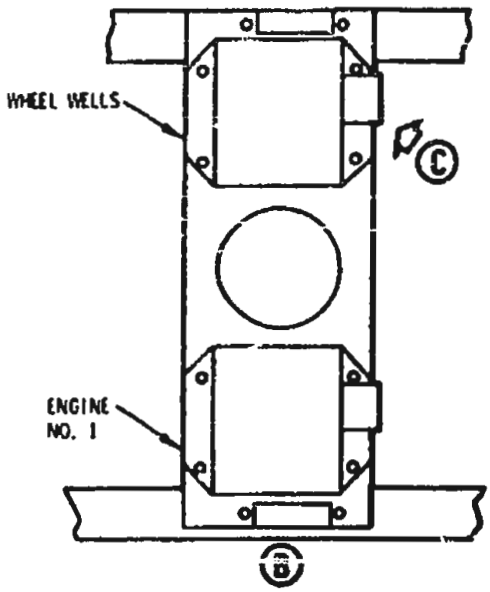


ZONE 112

FORWARD ELECTRONIC SERVICE CENTER



FIRE DETECTOR
INSTALLATION
LEFT SIDE



FIRE DETECTOR
INSTALLATION
RIGHT SIDE

HH 4824
M1-0102-26-020

Fire Detector Control Units - Removal and Installation
Figure 401

(3) Before removing control unit for engine No. 3, open and tag the following circuit breakers:

On pilots overhead circuit breaker panel CB1, zone 210:

FIRE DETECTION - MASTER ALARM PWR - ENG 3 (J3)

FIRE DETECTION - TEST (J5)

FIRE DETECTION - FIREBELL PWR (J6)

FIRE DETECTION - LOOP A ALARM - ENG 2 (K2)

FIRE DETECTION - LOOP B ALARM - ENG 2 (K7)

(4) Before removing control unit for APU, open and tag the following circuit breakers:

On pilots overhead circuit breaker panel CB1, zone 210:

APU FIRE DETECT - MASTER ALARM PWR (D18)

FIRE DETECTION - APU FIRE SHUTDOWN (J7)

APU FIRE DETECT - ALARM-LOOP A (D16)

APU FIRE DETECT - ALARM-LOOP B (D17)

APU FIRE DETECT - MASTER ALARM PWR (D18)

FIRE DETECTION - LOOP A ALARM - APU (K4)

FIRE DETECTION - LOOP B ALARM - APU (K8)

FIRE DETECTION - MASTER ALARM PWR - WHL WELL APU (J4)

FIRE DETECTION - TEST (J5)

FIRE DETECTION - FIREBELL PWR (J6)

(5) Before removing control unit for main landing gear wheel wells, open and tag the following circuit breakers:

On pilots overhead circuit breaker panel CB1, zone 210:

FIRE DETECTION - MASTER ALARM PWR - WHL WELL APU (J4)

R FIRE DETECTION - TEST (J5)

R FIRE DETECTION - FIREBELL PWR (J6)

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215:

R APU BAT BUS - WHEEL WELL - FIRE DETECTOR - LOOP A
R (S1)

R APU BAT BUS - WHEEL WELL - FIRE DETECTOR - LOOP B
R (S2)

(6) Disconnect electrical connector from control unit and remove attaching screws.

B. Installation

(1) Verify that applicable circuit breakers opened in Step 3A(1), 3A(2), 3A(3), 3A(4), or 3A(5) are open and tagged.

(2) Secure control unit in place with attaching screws and connect electrical connector.

(3) Remove tags and close circuit breakers opened in Step 3A(1), 3A(2), 3A(3), 3A(4), or 3A(5).

(4) Test affected fire detection system (26-11-00).

ALARM BELL - REMOVAL AND INSTALLATION

1. Referenced Procedures

26-11-00 Fire Detection System - Adjustment and Test

2. Removal/Installation

A. Removal

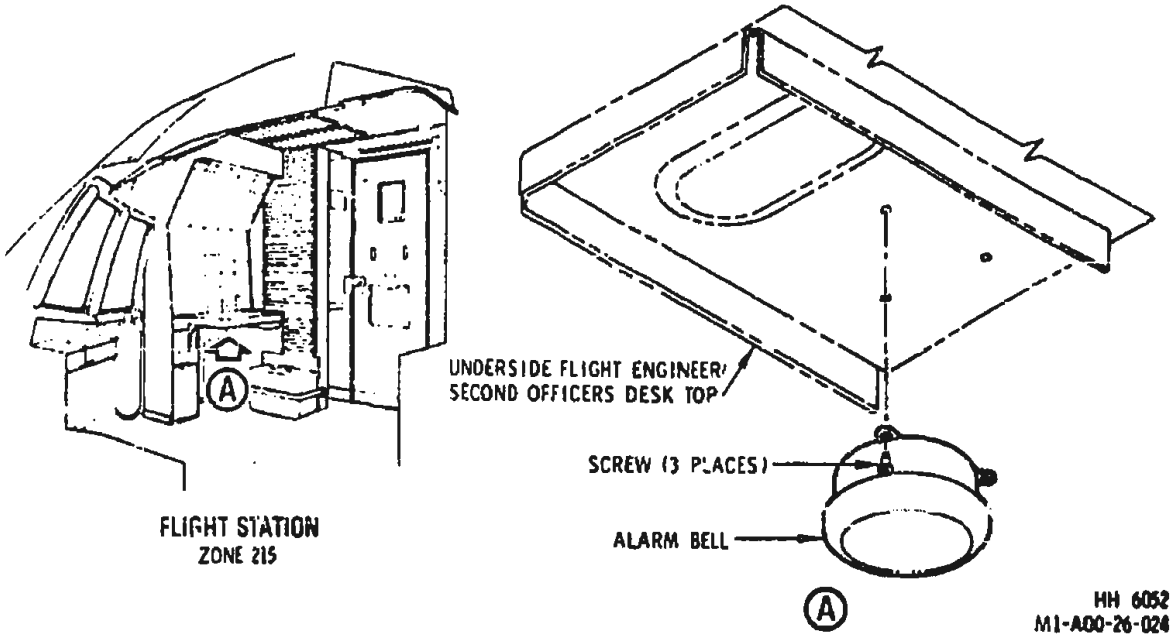
R (1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breaker FIREBELL PWR J6.

(2) Disconnect electrical wires from alarm bell mounted to underside of Flight Engineer/Second Officers desk top, zone 215, (Ref. Fig. 401).

(3) Remove mounting screws holding alarm bell in position.

B. Installation

(1) Verify circuit breaker opened in Step 2A(1) is open and tagged.



Alarm Bell - Removal and Installation
Figure 401

R (2) Fasten alarm bell to underside of Flight Engineer/Second Officers desk top with mounting screws.

(3) Connect electrical wires to alarm bell.

R (4) Remove tag and close circuit breaker opened in Step
R 2A(1).

(5) Perform fire detection system adjustment and test (Ref. 26-11-00).

ENGINE FIRE EMERGENCY SHUTOFF CONTROLS, ENGINES NO. 1, 2, AND 3 REMOVAL AND INSTALLATION

1. General

C A. Removal and installation procedures for all fire emergency engine shutoff control panels, zones 213 and 214, (Ref. Fig. 401) are the same except for affected circuit breakers.

CR B. The emergency shutoff control pull handles for engines No. 1, 2, 3 and the APU are identical and interchangeable except for the snap-on legend which identifies the control portion.

CR C. The control handles are stocked separately under the following Mfg. P/N's.

CR Engine No. 1 Shutoff Handle - 1602969-109(271-0026)

CR Engine No. 2 Shutoff Handle - 1602969-111 (271-0027)

CR Engine No. 2 Shutoff Handle - 1602969-111(271-0027)

CR Engine No. 3 Shutoff Handle - 1602969-113(271-0028)

CR APU Shutoff Handle - 1602969-107/-115(271-0029)

CR D. If the desired handles is not in stock any of the above listed handles may be used provided the following procedure is followed.

CR (1) Remove legend from handle being installed and discard it (Ref. Fig. 402).

CR (2) Remove legend from handle being removed and install on unit being installed.

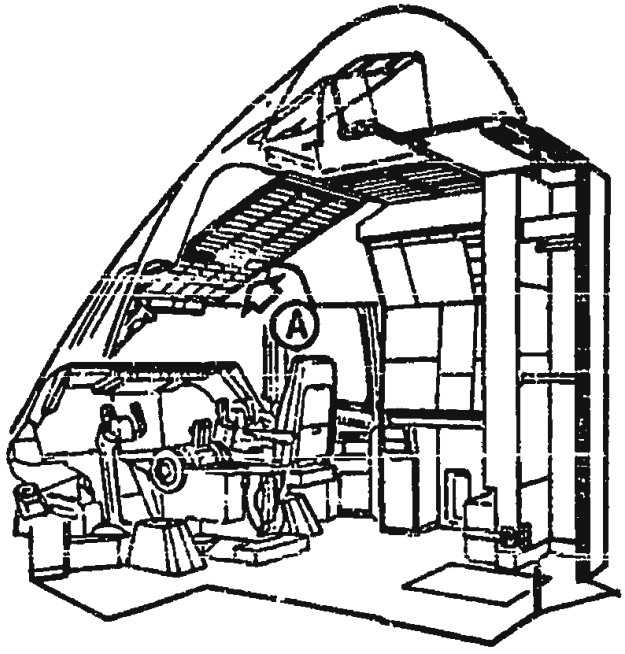
CR (3) Re-identify shutoff handle to make it correspond to Mfg P/N given above.

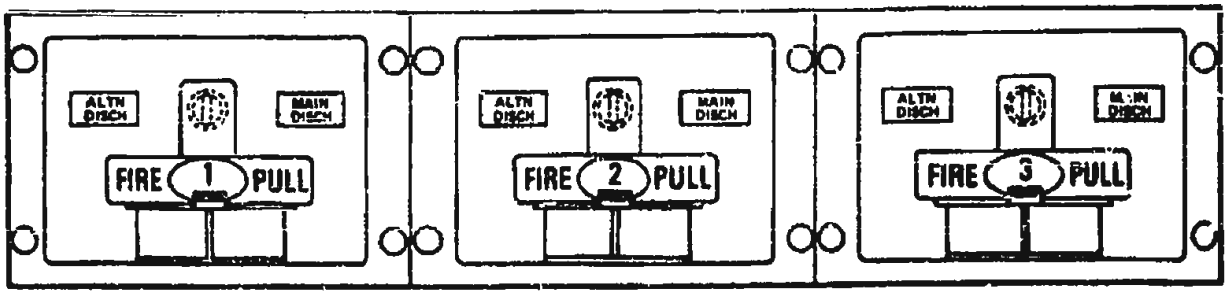
CR Example:

CR APU shutoff handle from stock in engine No. 1 position.
CR Change Mfg. P/N from 1602969-107/-115 to 1602969-109.

2. Referenced Procedure

26-11-00 Fire Detection System - Adjustment and Test





M1-0101-26-003

CR Fire Emergency Engine Shutoff Control
CR Figure 401

EFFECTIVITY: 001-008 WITH SB26-007, AND 009-999

001B

R 26-21-00 Engine/APU Fire Extinguishing System - Adjustment
R and Test

3. Removal/Installation

A. Removal

(1) Before removing control panel No. 1, open and tag the following circuit breakers:

On pilots overhead circuit breaker panel CB1, zone 210:

FIRE DETECTION - MASTER ALARM PWR - ENG 1 (J1)

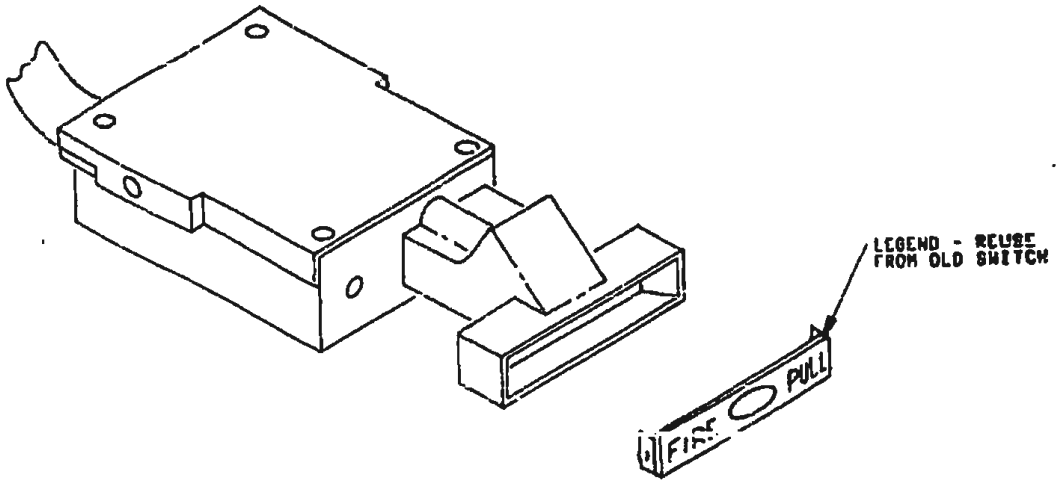
FIRE DETECTION - FIREBELL PWR (J6)

FIRE EXTINGUISHER - ENG 1 - MAIN (C10)

FIRE EXTINGUISHER - ENG 1 - ALTN (C11)

GEN CONTROL UNITS - GEN 1 (K15)

ENGINE BLEED CONTROL - ENG ISLN VALVES - ENG 1 (G10)



M1-0000-26-1061

C Fire Pull Handle Switch
C Figure 402

FUEL SHUTOFF VALVE - TANK - ENG 1 (D10)

HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS A (L15)

HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS B (L16)

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215:

ENG 1 - EMER & L X FEED (T7)

ENG 1 - TANK VALVE (T6)

On aircraft 001-031 without SB26-016,
ENG 1 - ACCESS VENT AIR (N1)

(2) Before removing control panel No. 2, open and tag the following circuit breakers:

On pilots overhead circuit breaker panel CB1, zone 210:

FIRE DETECTION - MASTER ALARM PWR - ENG 2 (J2)

FIRE DETECTION - FIREBELL PWR (J6)

FIRE EXTINGUISHER - ENG 2 - MAIN (C12)

FIRE EXTINGUISHER - ENG 2 - ALTN (C13)

GEN CONTROL UNITS - GEN 2 (K16)

ENGINE BLEED CONTROL - ENG ISLN VALVES - ENG 2 (G11)

FUEL SHUTOFF VALVES - TANK - ENG 2 (D11)

FUEL SHUTOFF VALVE - PRI EMER - 2 (D14)

HYD - PUMP & FIREWALL SHUTOFF VALVE C (L17)

HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS B (L16)

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215:

ENG 2 - TANK (T9)

ENG 2 - SEC EMER CX FEED (T10)

INSTR & CONTROLS - ALL ENGINES - ENG-2-PRI EMER (R18)

On aircraft 001-031 without SB26-016, ENG 2 - ACCESS VENT AIR (N7)

(3) Before removing control panel No. 3, open and tag the following circuit breakers:

On pilots overhead circuit breaker panel CB1, zone 210:

FIRE DETECTION - MASTER ALARM PWR - ENG 3 (J3)

FIRE DETECTION - FIREBELL PWR (J6)

FIRE EXTINGUISHER - ENG 3 - MAIN (C14)

FIRE EXTINGUISHER - ENG 3 - ALTN (C15)

ENGINE BLEED CONTROL - ENG ISLN VALVES - ENG 3 (G12)

FUEL SHUTOFF VALVE - TANK - ENG 3 (D12)

GEN CONTROL UNITS - GEN 3 (K17)

HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS D (L18)

HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS B (L16)

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215:

ENG 3 - TANK VALVE (T12)

ENG 3 - EMER & R XFEED (T13)

On aircraft 001-031 without SB26-016, ENG 3 - ACCESS VENT AIR (N13)

(4) Release fasteners, pull panel forward, and disconnect electrical connector at rear of panel. Remove panel.

B. Installation

(1) Verify applicable circuit breakers opened in Step 3A(1), 3A(2), or 3A(3) are open and tagged.

(2) Connect electrical connector at rear of panel, move panel into place and secure with front fasteners.

(5) Remove tags and close circuit breakers opened in Step 3A(1), 3A(2), or 3A(3).

(4) Test affected fire detection system (Ref. 26-11-00).

R (5) Perform Functional Check of Fire Extinguishing System
R (Ref. 26-21-00).

R (6) Operational tests of components actuated by FIRE PULL handles are located as follows:

(a) Fuel Firewall Shutoff Valves

28-24-00, Engine Fuel Feed System - Adjustment and Test

(b) Hydraulic Firewall Shutoff Valves

29-11-32, Hydraulic Firewall Shutoff Valve - Adjustment and Test

(c) Engine Isolation Valves

36-11-00, Engine Bleed Air System - Adjustment and Test

(d) On aircraft 001-031 without SB26-016, Engine Ventilation Air Inlet Shutoff Valves

75-21-04, Air Inlet Shutoff Valve (Zone 1) Engines No. 1 and 3 - Adjustment and Test

75-21-05, Air Inlet Shutoff Valve (Zone 1) Engine No. 2 - Adjustment and Test

(e) Generators

R 24-20-00, AC Generation - Adjustment and Test

4. Relamping

A. Engine Fire Emergency Shutoff Controls

(1) Compress ends of front cover on shutoff control handle and pull cover off handle.

(2) Remove and replace lamps.

(3) Replace front cover.

APU ENGINE FIRE EMERGENCY SHUTOFF CONTROL - MAINTENANCE PRACTICES

1. Maintenance Practices

A. Inoperative APU Automatic Fire Shutdown

APU emergency shutdown can be initiated at the APU fire emergency shutoff control panel on Flight Engineer/Second Officers upper panel, or the APU external control panel located on the bottom centerline of the fuselage, at access panel 142FB.

R Make appropriate entry in aircraft log book.

APU ENGINE FIRE EMERGENCY SHUTOFF CONTROL REMOVAL AND INSTALLATION

C 1. General

C A. The emergency shutoff controls for engines No. 1, 2, 3 and C the APU are identical and interchangeable except for the C snap-on legend which identifies the control portion.

C B. The controls are stocked separately under the following Mfg C P/N's.
C Engine No. 1 Shutoff Control - 602969-101

C Engine No. 2 Shutoff Control - 602969-103

C Engine No. 3 Shutoff Control - 602969-105

C APU Shutoff Control - 602969-107

C C. If the desired control is not in stock any of the above C listed controls may be used provided the following procedure C is followed.

C (1) Remove legend from control being installed and discard C it (Ref. Fig. 402.)

C (2) Remove legend from control being removed and install on C control being installed.

C (3) Re-identify shutoff control to make it correspond to C Mfg P/N given above.

C Example:

C Engine No. 1 shutoff control from stock used in C APU position. Change Mfg P/N from 602969-101 to C 602969-107.

C 2. Referenced Procedures

	26-11-00	Fire Detection System - Adjustment and Test
R	26-21-00	Engine/APU Fire Extinguishing System - Adjustment
R		and Test

C 3. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag the following circuit breakers:

FIRE DETECTION - MASTER ALARM PWR - WHL WELL APU (J4)

FIRE DETECTION - APU FIRE SHUTDOWN (J7)

FIRE DETECTION - FIREBELL PWR (J6)

FIRE DETECTION - APU SEC EMER SHUTOFF (J8)

APU FIRE DETECT - MASTER ALARM PWR (D18)

FIRE EXTINGUISHER - APU FIRE SHUTDOWN (C18)

FIRE EXTINGUISHER - APU - MAIN (C16)

FIRE EXTINGUISHER - APU - ALTN (C17)

FUEL SHUTOFF VALVE - PRI EMER - APU (D15)

(2) On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag the following circuit breakers:

APU POWER - APU GEN CONT UNIT (B17)

ESS BUS - APU BLEED AIR VALVE (S18)APU BATT BUS - FIREWALL SHUTOFF - PRIM (S7)

APU BATT BUS - FIREWALL SHUTOFF - SEC (S8)

(3) On Flight Engineer/Second Officers APU CONTROL panel verify MASTER POWER switch is OFF.

(4) Release fasteners on APU engine fire emergency shutoff control panel (Ref Fig. 401).

(5) Pull panel forward and disconnect electrical connector at rear of panel.

B. Installation

(1) Verify that circuit breakers opened in Steps 3A(1) and 3A(2) are open and tagged.

(2) Verify APU MASTER POWER switch on APU CONTROL panel is OFF.

(3) Connect electrical connector at rear of panel, move panel into place and secure with front fasteners.

(4) Remove tags and close circuit breakers opened in Steps 3A(1) and 3A(2).

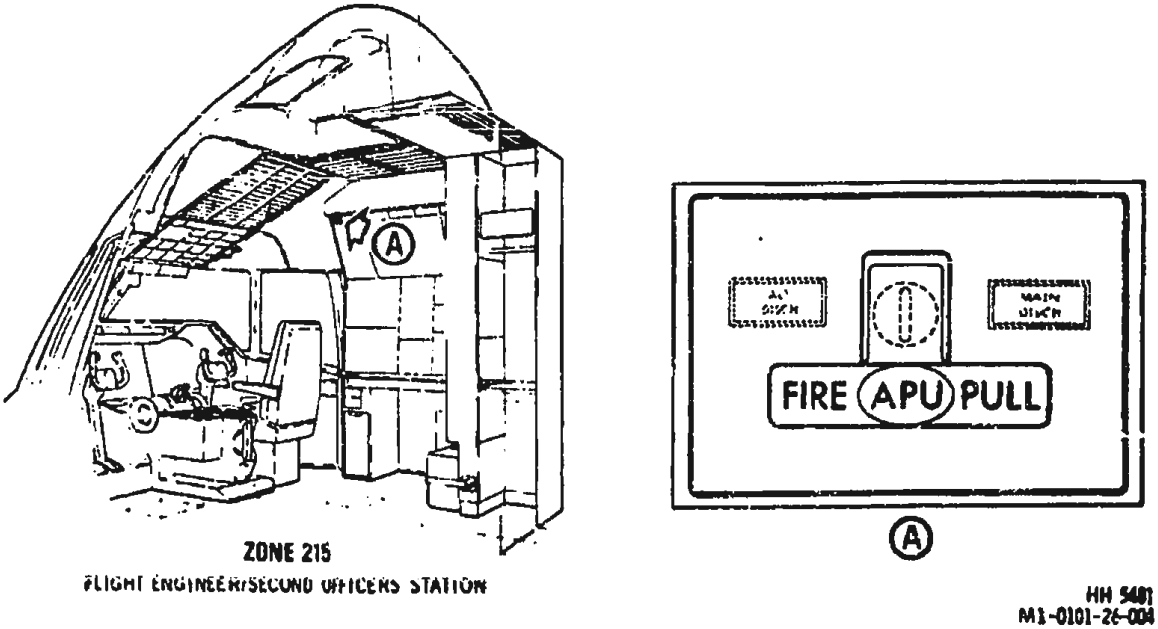
(5) Test affected fire detection system (Ref. 26-11-00).

R (6) Perform Functional Check of Fire Extinguishing System
R (Ref. 26-21-00).

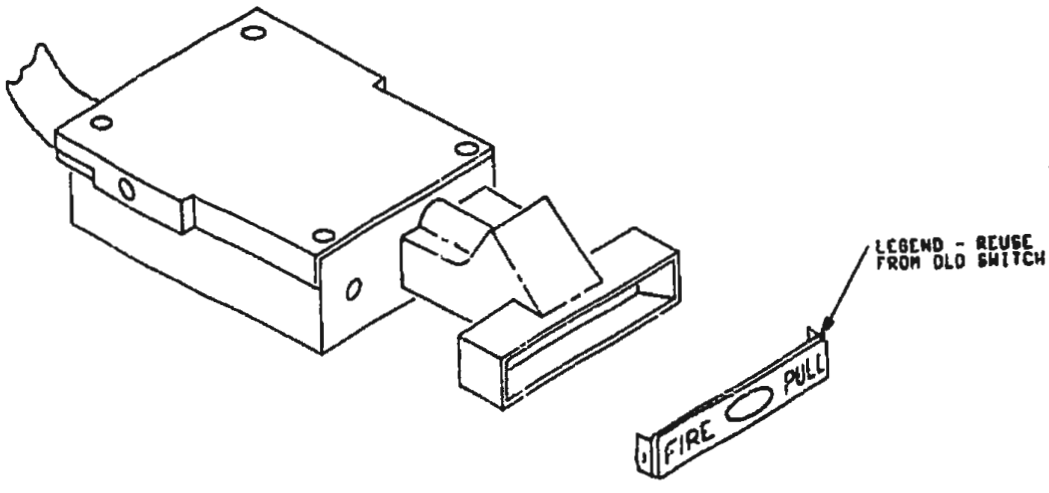
R (7) Operational tests of components actuated by the APU
R FIRE PULL handle are located as follows:

R (a) APU Fuel Firewall Shutoff Valve, Air Vent Valve,
R Vent Ejector Actuator and APU Duct Isolation
R Valve.

R 49-00-01, Auxiliary Power Unit (APU) - Adjustment
R and Test



APU Engine Fire Emergency Shutoff Control
Removal and Installation
Figure 401



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CR
CR

Fire Pull Handle Switch
Figure 402

R
R
001B

EFFECTIVITY: ALL

APU WARNING HORN - REMOVAL AND INSTALLATION

1. Referenced Procedure

   26-11-18 APU WARNING HORN - Adjustment and Test

2. Removal/Installation

   A. Removal

      (1) On the Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag circuit breaker APU BAT BUS - FIRE HORN (S6).

      (2) Open access door (bleed air vent inspection) in afterbody mid/lower section, zone 317.

      (3) Remove electrical connections from APU fire warning horn (Ref. Fig. 401).

      (4) Remove mounting screws attaching horn to mounting bracket.

      (5) Remove nuts and washers attaching horn motor to fuselage frame.

      (6) Remove horn and mounting gasket.

      (7) Remove horn motor mounting bracket.

   B. Installation

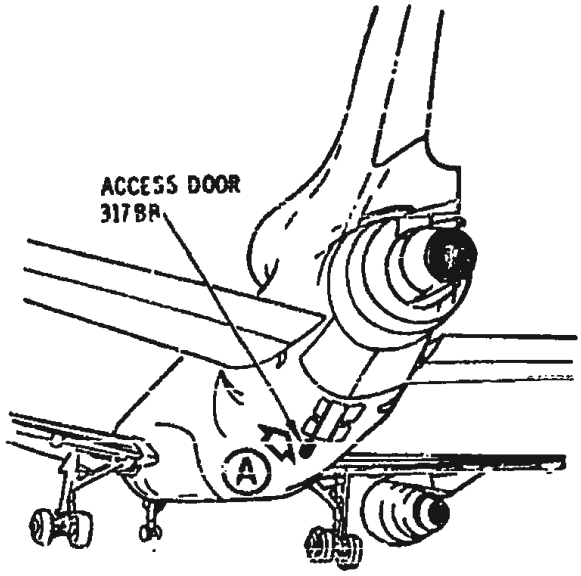
      (1) Verify circuit breaker opened in Step 2A(1) is open and tagged.

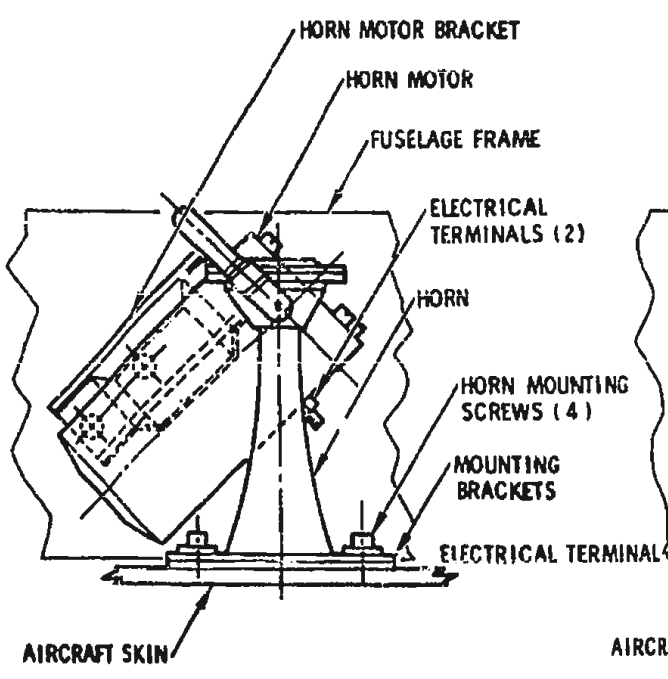
      NOTE: On aircraft without SB26-038, warning horn P/N 1562-7 (LCC P/N 672374-107) is interchangable with warning horn P/N 1562-5 (LCC P/N 672374-105). To install replacement horn P/N 1562-7 (LCC P/N 672374-107) a wire harness clamp may have to be removed to enable wire connections to reach horn motor electrical terminals.

      (2) Install mounting bracket to horn motor.

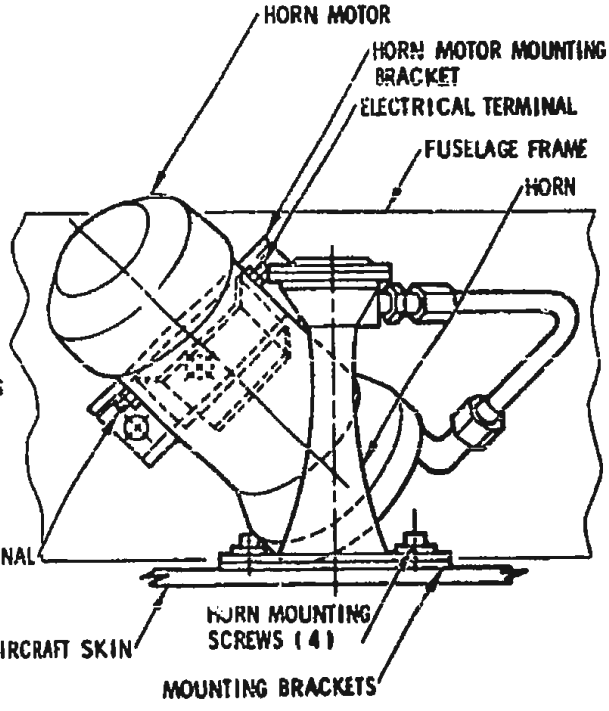
      (3) Place gasket and horn in mounting position.

      (4) Connect horn to mounting bracket with mounting screws.





APU WARNING HORN
P/N 1562-5 (LCC P/N 672374-105)



APU WARNING HORN
P/N 1562-7 (LCC P/N 672374-107)

(A)

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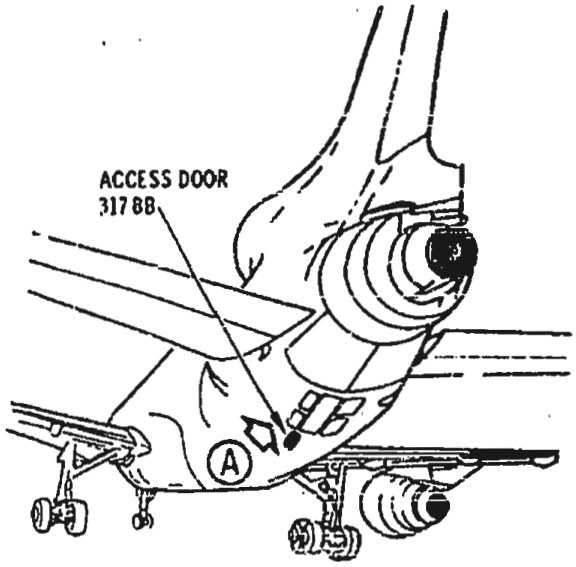
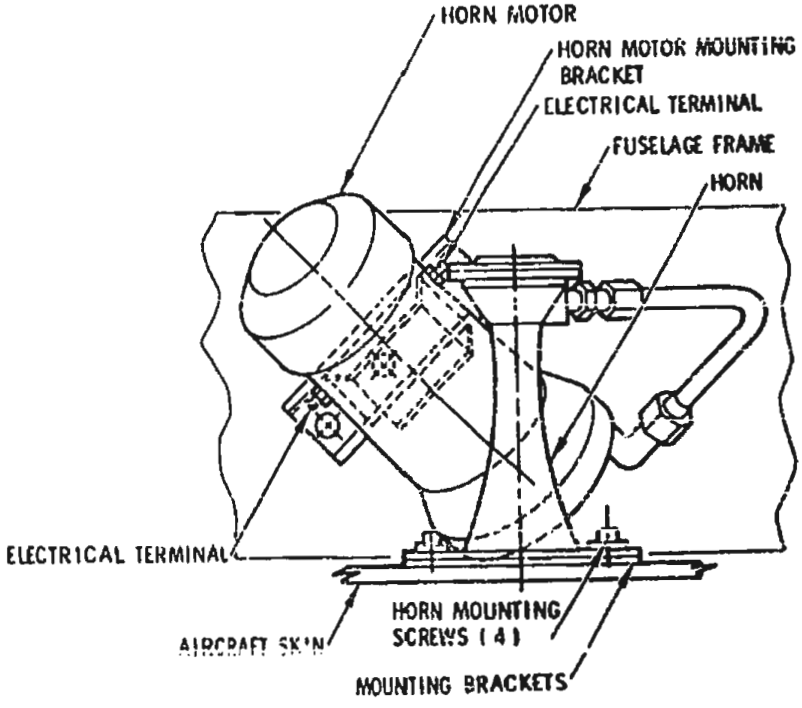
APU Warning Horn - Removal and Installation
Figure 401





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R R APU Warning Horn - Removal and Installation
Figure 401

R R 001B EFFECTIVITY: AIRCRAFT WITH SB26-038

(5) Connect horn motor to fuselage frame with washers and nuts.

(6) Connect electrical wires to horn motor.

(7) Remove tag and close circuit breaker opened in Step 2A(1).

(8) Close and secure access door.

(9) Test APU warning horn (Ref. 26-11-18).

APU WARNING HORN - ADJUSTMENT AND TEST

1. Referenced Procedures

12-16-03	APU Warning Horn - Servicing
24-41-00	External Power/Ground Service System - Maintenance Practices

2. Adjustment/Test

A. Operational Test

R WARNING: NOTIFY PERSONNEL IN VICINITY OF AIRCRAFT THAT APU
R WARNING HORN TEST WILL BE TAKING PLACE.

(1) Insure APU warning horn is serviced properly (Ref. 12-16-03).

(2) Turn on electrical power (Ref. 24-41-00).

(3) On the Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, verify that circuit breaker APU BAT BUS - FIRE HORN (S6) is closed.

(4) Turn on APU MASTER POWER switch,

(5) Depress and hold TEST A and TEST B pushbutton switches on the FIRE DETECTION LOOP TEST panel. Verify that APU fire horn sounds.

(6) Release both A and B TEST pushbutton switches.

(7) Verify that APU fire horn sound stops.

(8) Turn off electrical power (Ref. 24-41-00).

SENSOR CONNECTOR LEADS - APPROVED REPAIRS

1. General

Repair of the Sensor connecting leads consists of replacing connectors with pin plug connector or socket plug connector as applicable (Fig. 802).

2. Equipment and Materials

Copper Gasket, Walter Kidde

Crimp Tool, AMP, PN46447,

Splice Kit, Walter Kidde Fire Resistant Splice Kit

Pin plug connector, Walter Kidde, (Ref. Fig. 801)

Socket plug connector, Walter Kidde, (Ref. Fig. 801)

Heat Gun, Raychen, Model 750 or equivalent,

3. Referenced Procedures

6-40-00	Exterior Access Doors and Panels, Zone 300
26-11-00	Fire Detection System - Adjustment and Test
71-11-00	Engines No. 1 and No. 3 Cowling - Servicing
71-12-01	LH and RH Lower Hinged Cowl - Servicing
71-12-05	LH and RH Upper Hinged Cowl - Servicing
20-11-27	Wiring Manual

4. Approved Repairs

A. Shrink Sleeve Type Connector

R (1) Open and tag applicable circuit breakers:

R For engine No. 1 fire detection system:

R On circuit breaker panel CB1:

R FIRE DETECTION - LOOP A ALARM-ENG 1 (K1)

R FIRE DETECTION-LOOP B Alarm-Eng 1 (K5)

R FIRE DETECTION-MASTER ALARM PWR-ENG 1 (J1)

R FIREBELL PWR (J6)

R FIRE DETECTION-TEST (J5)

R For engine No. 2 fire detection System:

R On aircraft breaker panel CB1:

R FIRE DETECTION-LOOP A ALARM-ENG 2 (K2)

R FIRE DETECTION-LOOP B ALARM-ENG 2 (K6)

R FIRE DETECTION-MASTER ALARM PWR-ENG 2 (J2)

R FIREBELL PWR (J6)

R FIRE DETECTION-TEST (J5)

R For engine No. 3 fire detection system:

R On circuit breaker panel CB1:

R FIRE DETECTION-LOOP A ALARM-ENG 3 (K3)

R FIRE DETECTION-LOOP B ALARM-ENG 3 (K7)

R FIRE DETECTION-MASTER ALARM PWR-ENG 3 (J3)

R FIREBELL PWR (J6)

R FIRE DETECTION-TEST (J5)

R On APU fire detection system:

R On circuit breaker panel CB1:

R FIRE DETECTION-LOOP A ALARM-APU (K4)

R FIRE DETECTION-LOOP B ALARM-APU (K8)

R FIRE DETECTION-MASTER ALARM PWR-WHL WELL-APU
R (J4)

R FIREBELL PWR (J6)

R FIRE DETECTION-TEST (J5)

R On wheel well fire detection system:

R On circuit breaker panel CB1:

R FIRE DETECTION-MASTER ALARM PWR-WHL WELL-APU
R (J4)

R FIREBELL PWR (J6)

R FIRE DETECTION-TEST (J5)

R On circuit breaker panel CB3:

R WHEEL WELL-FIRE DETECTOR-LOOP A (51)

R WHEEL WELL-FIRE DETECTOR-LOOP B (52)

(2) Open applicable LH hinged cowl 413A or 423A and 414A or 424A for engines No. 1 and 3 (Ref. 71-11-00). Open
R applicable LH and RH lower hinged cowl 433AL and 434AE (Ref. 71-12-01) or LH and RH upper hinged cowl 433DL and 434DR (Ref. 71-12-05) for engine No. 2. Open APU compartment doors 319 AL, BR, CL and DR (Ref. 6-40-00).

(3) Disconnect applicable sensor connector Lead.

(4) Splice connectors into Fire Detection System wire harness (Ref. Wiring Manual 20-11-27).

(5) Reconnect sensor connector lead to sensor.

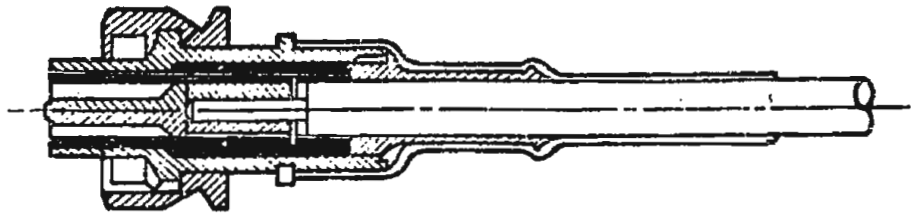
NOTE: Always install new plug gasket when mating connector to sensor.

(6) Torque connectors 60 (±10) inch pounds and lock-wire.

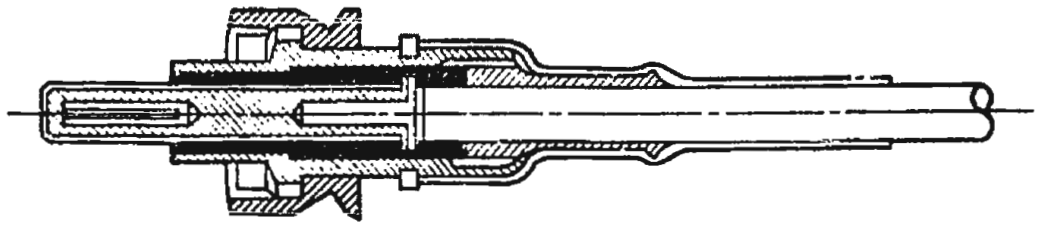
(7) Close circuit breakers opened in Step 4A(1).

(8) Verify operation of fire detection system (Ref. 26-11-00).

(9) Close hinged cowl opened in Step 4A(2).



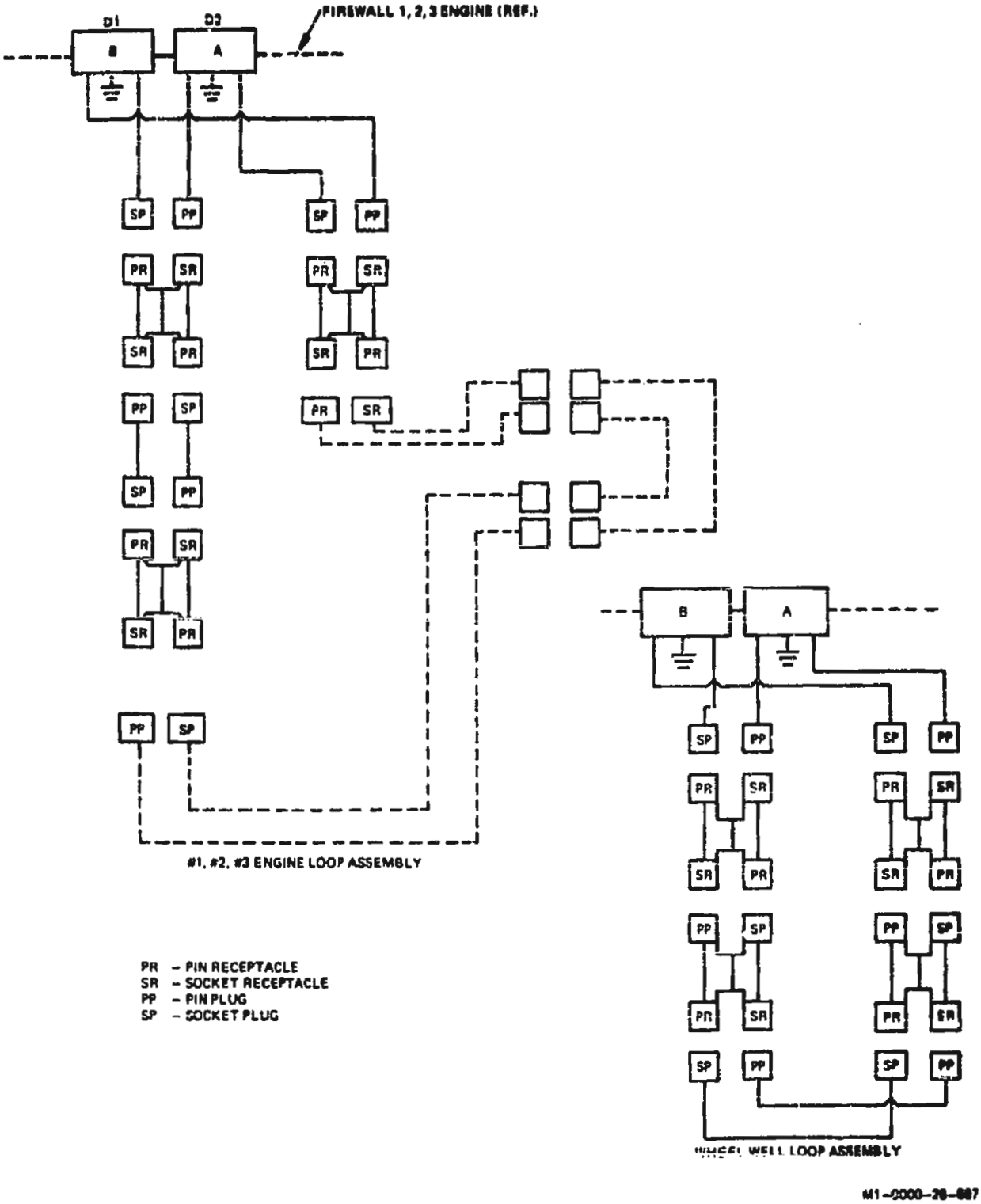
TYPICAL PIN PLUG CONNECTOR



TYPICAL SOCKET PLUG CONNECTOR

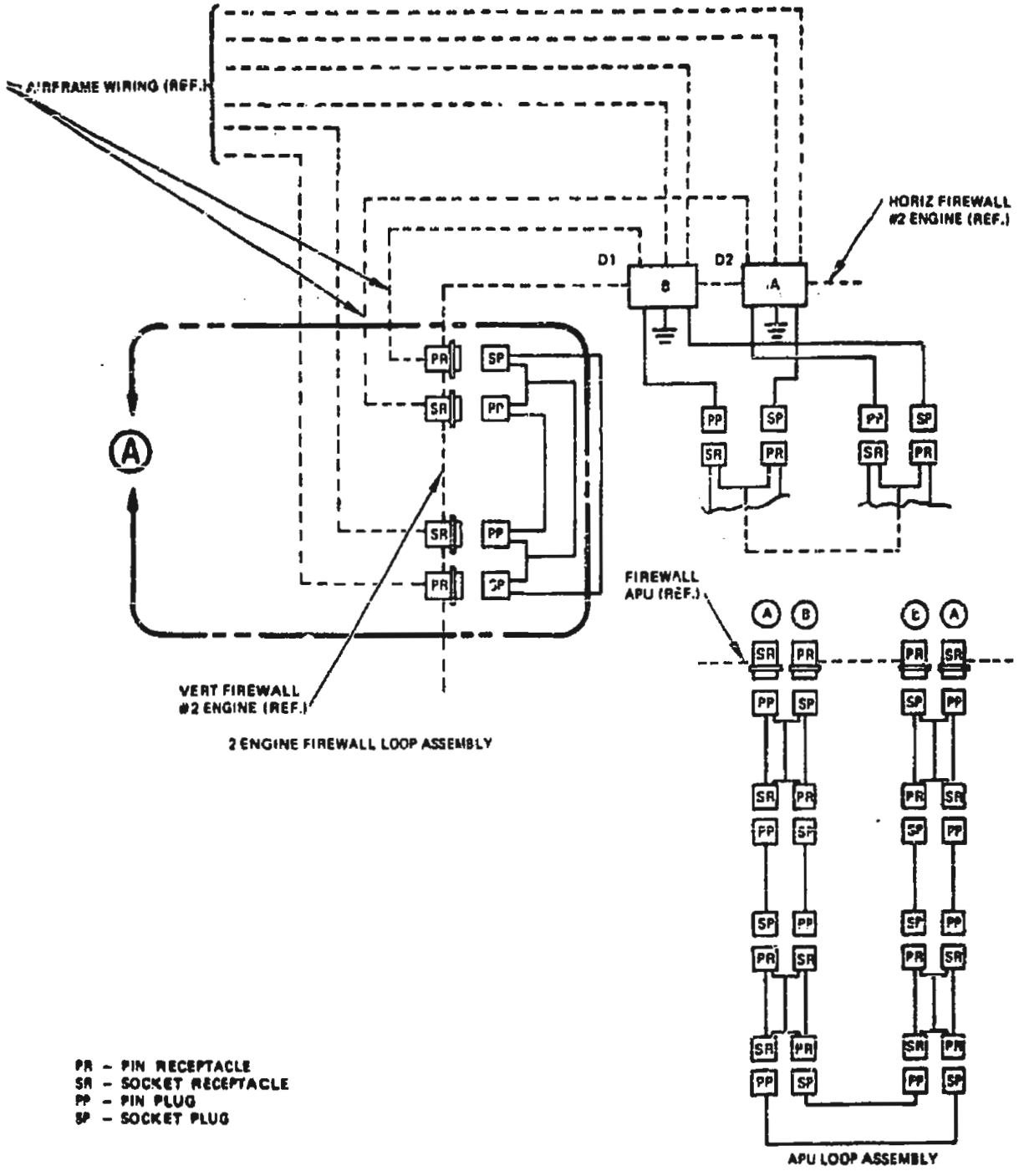
M1-0000-26-586

Shrink Sleeve Type Connectors
Figure 801

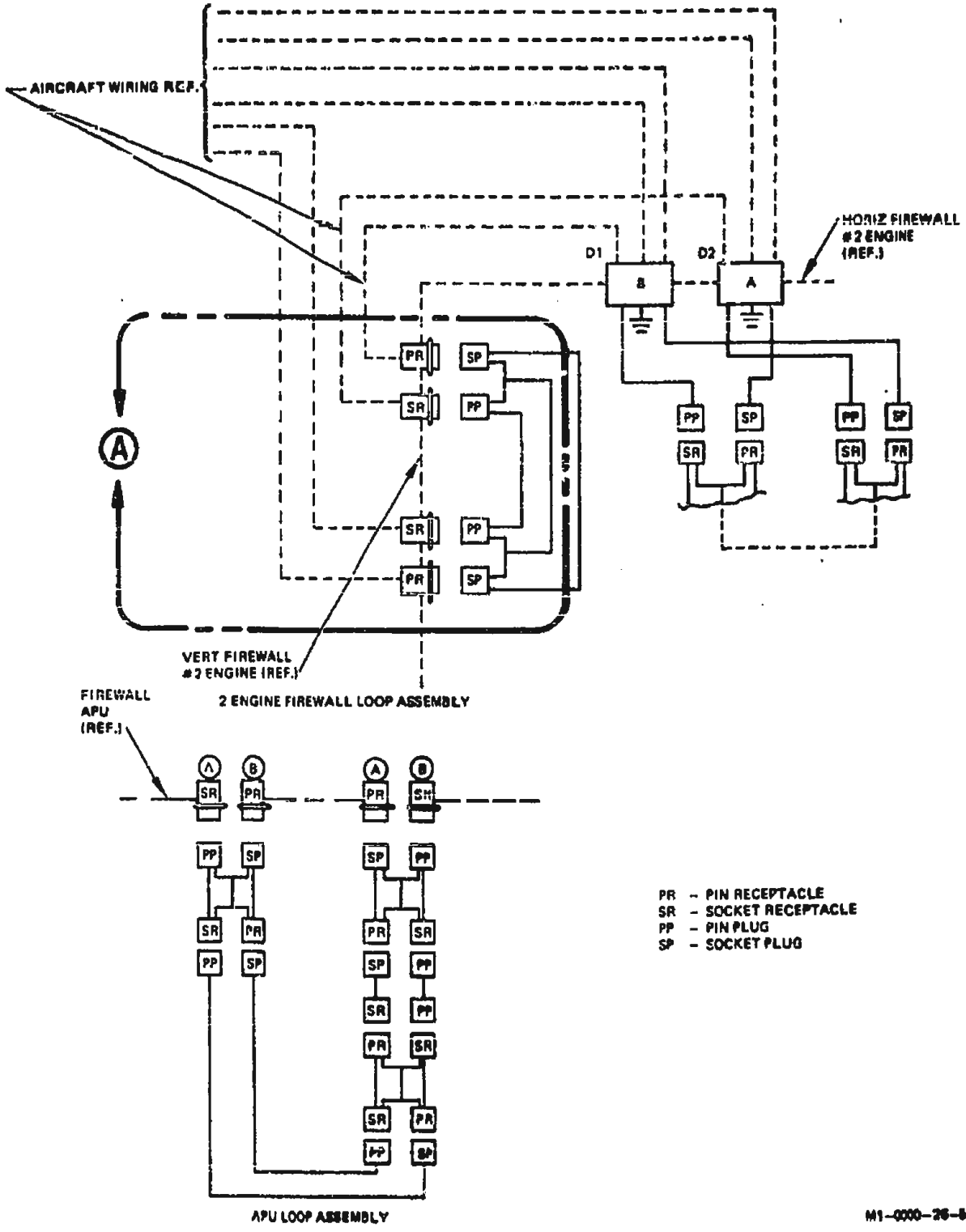


M1-C000-26-887

Sensor Schematic
Figure 802 (Sheet 1)



Sensor Schematic
Figure 802 (Sheet 2)



Sensor Schematic
Figure 802 (Sheet 2)

APU VENTILATION OUTLET SENSOR ASSEMBLY - REMOVAL AND INSTALLATION

1. Equipment and Materials

Copper Gaskets, Walter Kidde

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

2. Referenced Procedure

26-11-00 Fire Detection System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag the following circuit breakers:

FIRE DETECTION

MASTER ALARM PWR - WHL WELL - APU (J4)

R TEST (J5)

R FIREBELL PWR (J6)

R APU FIRE SHUTDOWN (J7)

R LOOP A ALARM - APU (K4)

R LOOP B ALARM - APU (K8)

R APU FIRE DETECT - ALARM

R LOOP A (D16)

R LOOP B (D17)

R FIRE EXTINGUISHER

R APU FIRE SHUTDOWN (C18)

R APU - MAIN (C16)

R APU - ALTN (C17)

(2) On Flight Engineer/Second Officers APU CONTROL panel, zone 215, ensure that MASTER POWER switch is in the OFF position. Attach a Maintenance-in-Progress tag to the switch.

(3) At right side of APU compartment, unlatch APU aft hinged access door 319DR.

(4) Disconnect electrical connectors from each end of sensing element (Ref. Fig. 401) and discard gaskets.

CAUTION: EXERCISE EXTREME CARE TO AVOID TWISTING, BENDING, KINKING, DENTING, OR OTHERWISE DAMAGING THE SENSING ELEMENTS.

(5) Unlock quick-release fasteners holding sensor support tube to mounting brackets and remove sensor assembly.

B. Installation

(1) Verify that circuit breakers opened in Step 3A(1) are open and tagged.

(2) Loosen clamp screws to allow clamps to slide on tube.

(3) Install sensor assembly on mounting brackets with quick-release fasteners.

(4) Tighten all clamp screws.

CAUTION: INSURE NEW GASKETS ARE USED WHEN EVER ASSEMBLY IS DISCONNECTED.

(5) Install new copper gaskets at each electrical connector as follows (Ref. Fig. 401):

(a) Insure that all parts are free of dirt, oil, and moisture.

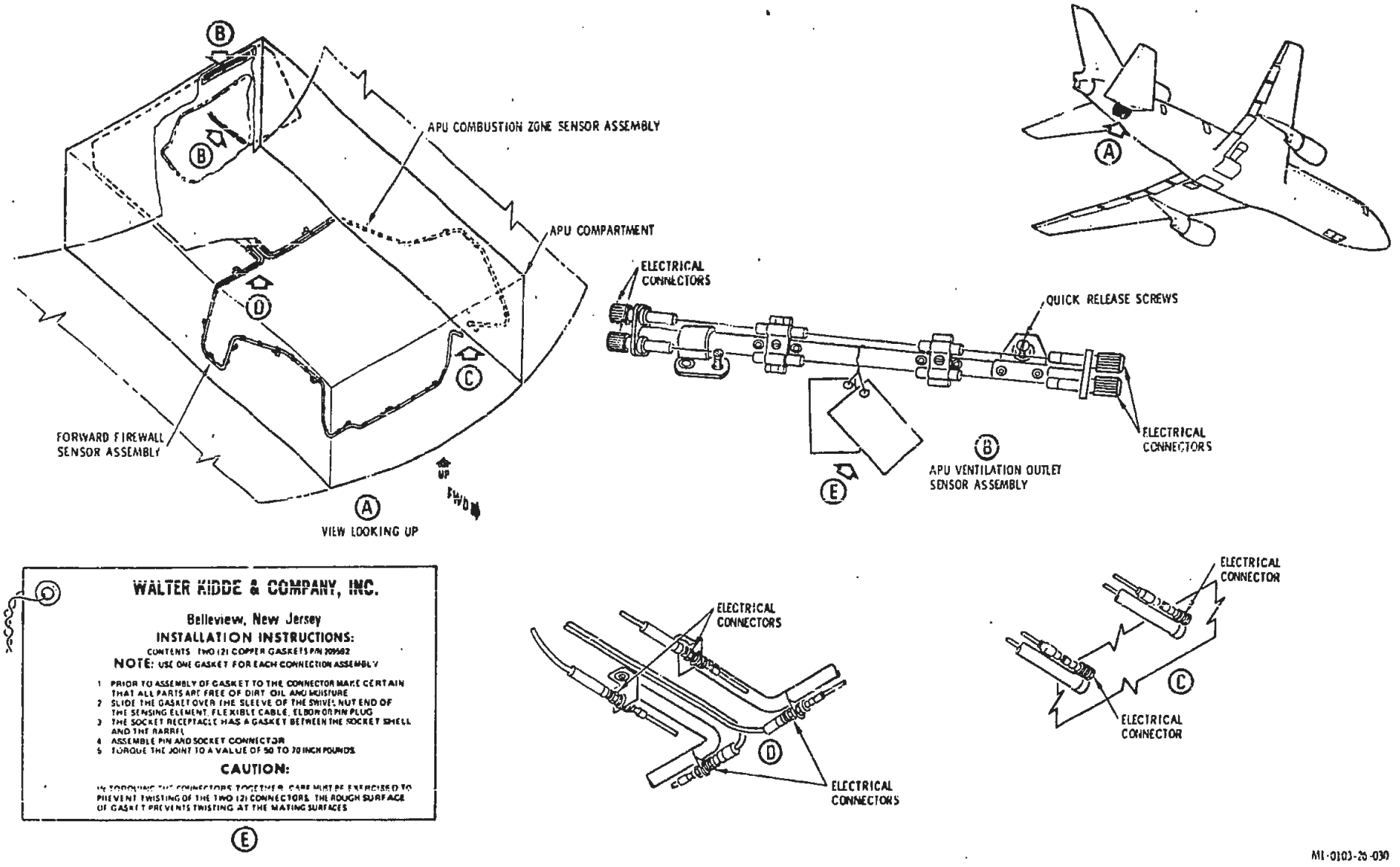
(b) Slide gasket over sleeve of swivel nut end of sensing element.

(c) Insure that the socket receptacle has a gasket between the socket shell and the barrel.

(d) Assemble pin and socket connector.

CAUTION: IN TORQUING THE CONNECTION, DO NOT TWIST THE TWO(2) CONNECTORS.

(e) Torque connection 60 ± 10 lb in.


B
APU COMBUSTION ZONE SENSOR ASSEMBLY
APU COMPARTMENT
FORWARD FIREWALL SENSOR ASSEMBLY
D
C
A
VIEW LOOKING UP
UP
FWD
A
ELECTRICAL CONNECTORS
QUICK RELEASE SCREWS
ELECTRICAL CONNECTORS
B
APU VENTILATION OUTLET SENSOR ASSEMBLY
E
C
WALTER KIDDE & COMPANY, INC.
Belleview, New Jersey
INSTALLATION INSTRUCTIONS:
CONTENTS TWO (2) COPPER GASKETS P/N 209582
NOTE: USE ONE GASKET FOR EACH CONNECTION ASSEMBLY
1 PRIOR TO ASSEMBLY OF GASKET TO THE CONNECTOR MAKE CERTAIN THAT ALL PARTS ARE FREE OF DIRT, OIL AND MOISTURE
2 SLIDE THE GASKET OVER THE SLEEVE OF THE SWIVEL NUT END OF THE SENSING ELEMENT, FLEXIBLE CABLE, ELBOW OR PIN PLUG
3 THE SOCKET RECEPTACLE HAS A GASKET BETWEEN THE SOCKET SHELL AND THE BARREL
4 ASSEMBLE PIN AND SOCKET CONNECTOR
5 TORQUE THE JOINT TO A VALUE OF 50 TO 70 INCH POUNDS
CAUTION:
IN TORQUING THE CONNECTORS TOGETHER, CARE MUST BE EXERCISED TO PREVENT TWISTING OF THE TWO (2) CONNECTORS. THE ROUGH SURFACE OF GASKET PREVENTS TWISTING AT THE MATING SURFACES
E
ELECTRICAL CONNECTORS
D
ELECTRICAL CONNECTORS
ELECTRICAL CONNECTOR
C
ELECTRICAL CONNECTOR

MI-0103-26-030

R APU Ventilation Outlet Fire Sensor - Removal and Installation
R Figure 401

EFFECTIVITY: ALL

0018

(6) Lock-wire electrical connectors.

(7) Close and secure access door.

(8) Remove tags and close circuit breakers opened in Step 3A(1).

(9) Remove tag installed in Step 3A(2).

(10) Test APU fire detection system (Ref. 26-11-00).

APU VENTILATION OUTLET SENSOR ASSEMBLY - INSPECTION AND CHECK

1. Equipment and Materials

Ohmmeter, Simpson PN 362, or equivalent

Ohmmeter leads (one lead terminating with Walter Kidde plug PN 876635 and one terminating with Walter Kidde plug PN 876633, with protective caps covering plugs)

Copper Gaskets, Walter Kidde PN 209592, no equivalent

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

2. Referenced Procedure

26-11-00 Fire Detection System - Adjustment and Test

3. Inspection/Check

A. Sensor Element Resistance Check

(1) On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag circuit breaker APU POWER - BAT - PWR (810).

R (2) On pilots overhead circuit breaker panel CB1, zone 210,
R open and tag circuit breaker FIRE DETECTION - MASTER
R ALARM PWR - WHL WELL - APU (J4).

R (3) Open APU right aft hinged access doors 319DR.

R CAUTION: DO NOT NICK OR SCRATCH CONNECTOR INTERFACE AND
R SEALING SURFACES.

R (4) Disconnect electrical connector at each end of sensor
R element.

R (5) Remove protective caps from ohmmeter leads and install
R on cable connectors.

R (6) Set ohmmeter to LOW scale and use leads with special terminations to measure resistance from center contact of connector at one end of sensor to center contact of connector at other end of sensor. Allowable resistance is 1.2 ohms maximum.

R (7) Use ohmmeter to verify that there is no short between
R center contact of either connector and shell of sensor.

R (8) Remove ohmmeter and leads.

R (9) Remove protective caps from cable connectors and
R install on ohmmeter leads.

R (10) Connect cable at each end of sensor using new copper
R gaskets, torque connectors 60 ± 10 lb in. Lock-wire
R connectors.

R (11) Close circuit breakers opened in Step (1).

R (12) Close APU access door opened in Step (2).

R (13) Test APU fire detection system (Ref. 26-11-00).

COMBUSTION AND ZONE 3 FIRE DETECTORS - REMOVAL AND INSTALLATION

1. General

The following removal and installation procedures for the combustion and Zone 3 fire detectors are the same for all engines. Removal preparation (Para. 4A) is to be performed prior to removing any sensor assembly. The procedures are divided into the following sections:

Removal and installation of lower combustion fire detector sensor assembly (Para. 4B and 4E).

Removal and installation of upper combustion fire detector sensor assembly (Para. 4C and 4F).

Removal and installation of Zone 3 fire detector sensor assembly (Para. 4D and 4G).

2. Equipment and Materials

Copper Gaskets, Walter Kidde

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

Splitter Area Access Work Platform, PN CP20309, Rolls-Royce Ltd., or equivalent

Protective caps

R DC-4 Silicone Grease

3. Referenced Procedures

26-11-00	Fire Detection System - Adjustment and Test
72-03-00	Gas Generator Fairings - Maintenance Practices
78-30-00	Thrust Reverser - Maintenance Practices

4. Removal/Installation

A. Removal Preparation

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag following circuit breakers as applicable for particular engine:

THRUST REVERSE - ENG - 1(H16), 2 (H17), or 3 (H18)

ENGINE - START CONT - ENG - 1 (E13), 2 (E14), or 3 (E15)

FIRE DETECTION -

LOOP A ALARM - ENG - 1 (K1), 2 (K2), or 3 (K3)

LOOP B ALARM - ENG - 1 (K5), 2 (K6), or 3 (K7)

MASTER ALARM PWR - ENG - 1 (J1), 2 (J2), or 3 (J3)

TEST (J5)

FIREBELL PWR (J6)

FIRE EXTINGUISHER -

ENG 1 - MAIN (C10) and ALTN (C11)

ENG 2 - MAIN (C12) and ALTN (C13)

ENG 3 - MAIN (C14) and ALTN (C15)

(2) On pilots center console, zone 210, install warning tags on applicable power control and thrust reverser levers, and on APU/GROUND AIR TO REVERSER HOLD SWITCHES.

(3) Gain access to applicable engine isolation valve by opening panel 511LB-3 for engine No. 1, 611LB-3 for engine No. 3, or 471AL for engine No. 2.

(4) Verify that isolation valve is in closed position (external valve arm in position C).

(5) Remove threaded lockout pin from stowed position. Install it through hole in external valve arm and screw securely into valve body and tag with (REMOVE BEFORE FLIGHT) streamer.

WARNING: DO NOT ENTER COLD STREAM NOZZLE UNTIL THRUST REVERSER IS LOCKED IN THE FORWARD-THRUST POSITION.

(6) Deactivate and tag thrust reverser and associated systems, and install thrust reverser mechanical locks (Ref. 78-30-00).

(7) Position splitter area access work platform in cold stream collector nozzle, zone 415, 425, or 435.

B. Removal of Lower Combustion Fire Detector Sensor Assembly

(1) Perform Steps 4A(1) through 4A(7).

(2) Enter cold stream duct and remove combustion section LH and RH side fairings (Ref. 72-03-00).

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING.
R DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

(3) Disconnect electrical connectors from each end of sensing element and discard gaskets (Ref. Fig. 401).

(4) Place protective caps on all electrical connectors.

(5) Remove attaching bolts.

(6) Support sensor assembly and remove attaching bolt and ground lead, then carefully remove sensor assembly from engine.

C. Removal of Upper Combustion Fire Detector Sensor Assembly

(1) Perform Steps 4A(1) through 4A(7).

(2) Enter cold stream duct and remove combustion section LH and RH side and upper fairings (Ref. 72-03-00).

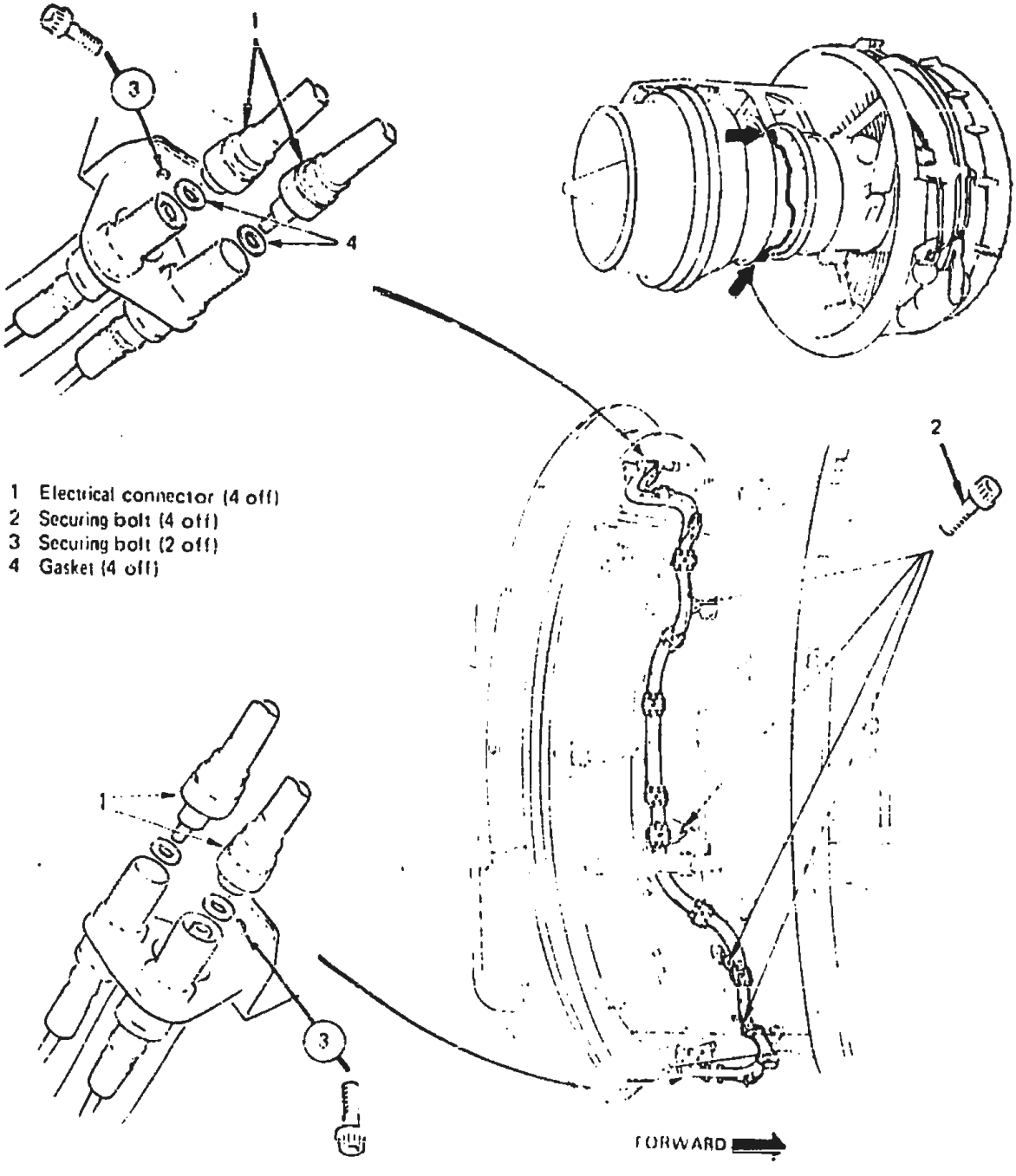
R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING.
R DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

(3) Disconnect electrical connectors from each end of sensing element and discard gaskets (Ref. Fig. 402).

(4) Place protective caps on all electrical connectors.

(5) Remove attaching bolts.

(6) Support sensor assembly and remove attaching bolt and ground lead, then carefully remove sensor assembly from engine.



1 Electrical connector (4 off)
2 Securing bolt (4 off)
3 Securing bolt (2 off)
4 Gasket (4 off)

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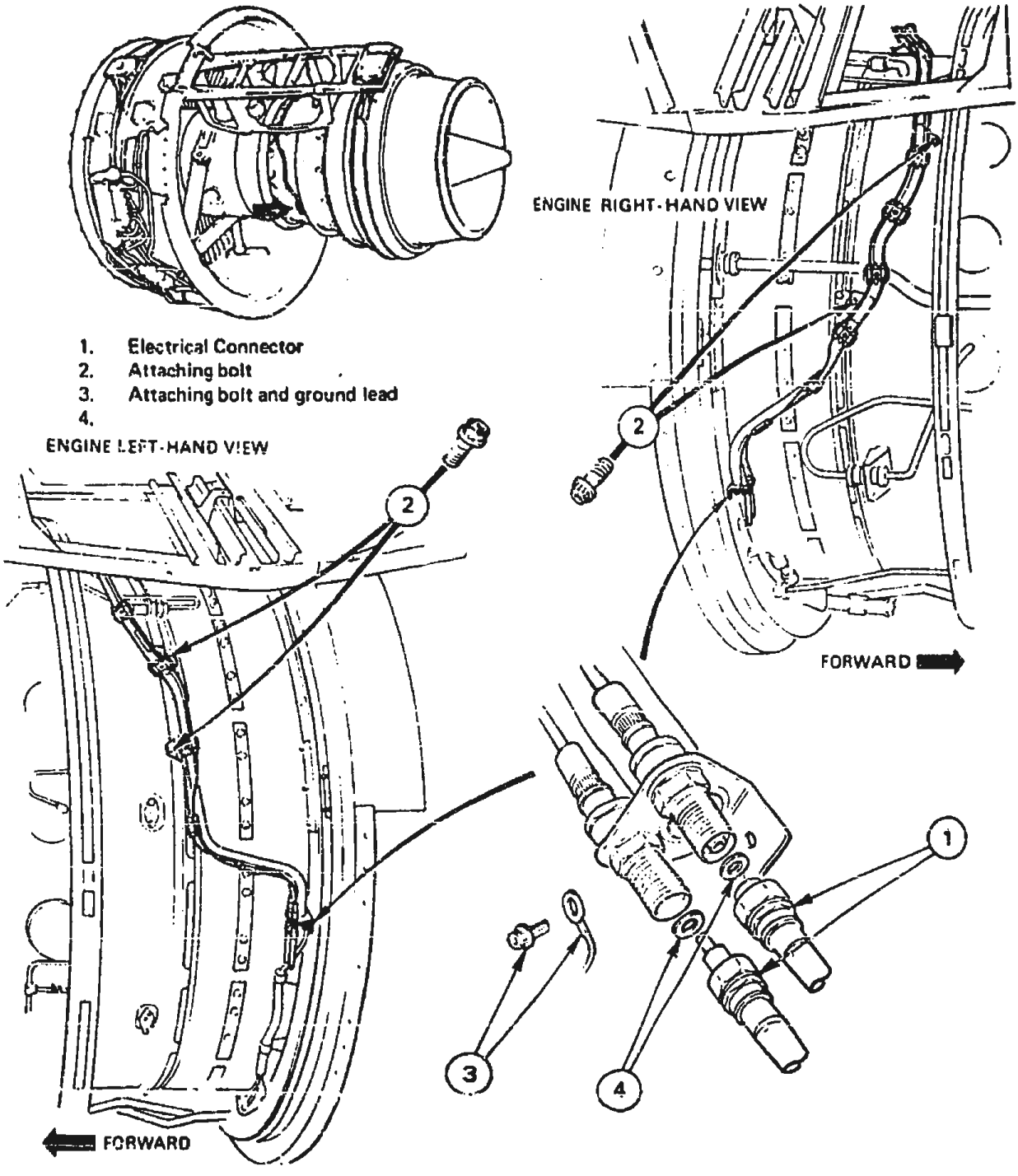
M1-0002-26-048

R Lower Combustion Fire Detector Sensor Assembly
R Removal and Installation
R Figure 401

EFFECTIVITY: ALL

001B



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R Upper Combustion Fire Detector Sensor Assembly
R Removal and Installation
R Figure 402

EFFECTIVITY: ALL

0018

D. Removal of Zone 3 Fire Detector Sensor Assembly

(1) Perform Steps 4A(1) through 4A(7).

(2) Enter cold stream duct and remove interservices fairing LH and RH front access panel (Ref. 72-03-00).

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING.
R DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

(3) Disconnect electrical connectors from each end of sensing element and discard gaskets (Ref. Fig. 403).

(4) Place protective caps on all electrical connectors.

(5) Release quick-release fasteners and carefully remove sensor assembly from the front.

E. Installation of Lower Combustion Fire Detector Sensor Assembly

(1) Verify that circuit breakers opened in Step 4A(1) are open and tagged.

(2) Verify that warning tags installed in Step 4A(2) are in place.

(3) Verify that lockout pin installed in Step 4A(5) is in place

(4) Verify that thrust reverser mechanical locks installed in Step 4A(6) are in place.

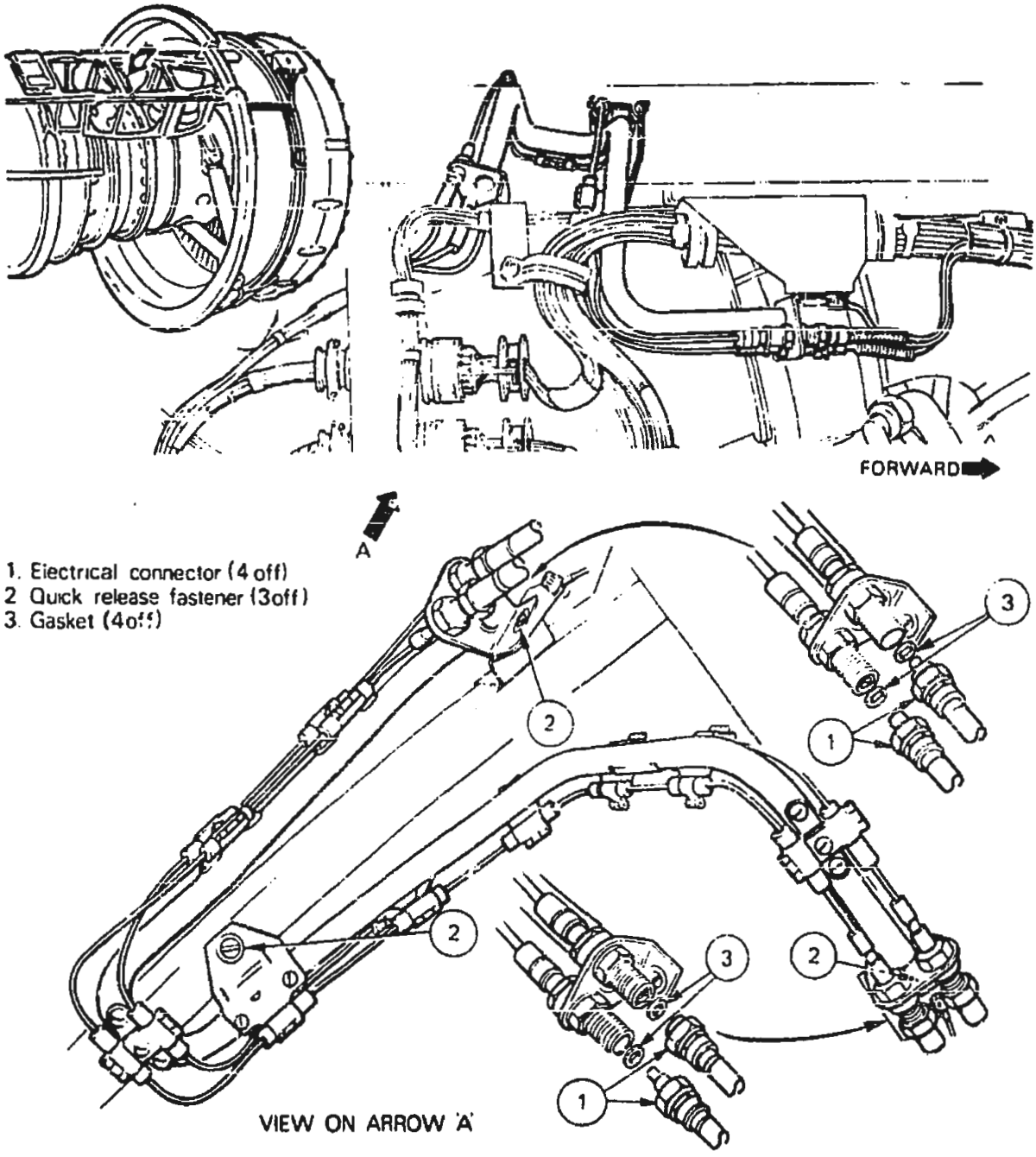
(5) Verify that work platform installed in Step 4A(7) is in place.

WARNING: DO NOT ENTER THE COLD STREAM NOZZLE UNTIL THRUST REVERSER SYSTEM IS LOCKED IN THE FORWARD-THRUST POSITION.

(6) Enter the cold stream duct.

(7) Carefully position sensor assembly on combustion outer case and engine fireseal (Ref. Fig. 401).

On engines without SB72-3732,
install attaching bolts ensuring that ground leads are titted under bolt heads.



M1-0102-26-060

Zone 3 Fire Detector Sensor Assembly - Removal and Installation
Figure 403

On engines with SB72-3732, install attaching bolts ensuring that ground leads are fitted under bolt heads at the front end of No. 1 sensor, and the front left end of No. 6 sensor.

(8) Remove protective caps from electrical connectors.

R CAUTION: ENSURE NEW GASKETS ARE INSTALLED WHENEVER SENSOR ASSEMBLY IS DISCONNECTED.

R ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO
R NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

R DO NOT TWIST THE TWO CONNECTORS WHEN TORQUE
R TIGHTENING.

(9) Ensure that electrical connectors are free from dirt, oil, or moisture, install a new gasket at each connector.

NOTE: Apply a light coat of DC-4 Silicone Grease to the copper gasket. Avoid getting grease in the connector cavity or on the connector contacts.

(10) Connect electrical connectors and torque to a value of 60±10 lb in. Lock-wire connectors.

(11) Remove tags and close circuit breakers opened in Step 4A(1).

(12) Verify operation of affected fire detection system (Ref. 26-11-00).

(13) Install combustion section LH and RH side fairings (Ref. 72-03-00).

(14) Remove working platform from cold stream duct.

(15) Remove thrust reverser mechanical locks installed in Step 4A(6).

(16) Remove and stow lockout pin and streamer installed Step 4A(5).

(17) Close access panel opened in Step 4A(3).

(18) Remove warning tags installed in Step 4A(2).

F. Installation of Upper Combustion Fire Detector Sensor Assembly

(1) Verify that circuit breakers opened in Step 4A(1) are open and tagged.

(2) Verify that warning tags installed in Step 4A(2) are in place.

(3) Verify that lockout pin installed in Step 4A(5) is in place.

(4) Verify that thrust reverser mechanical locks installed in Step 4A(6) are in place.

(5) Verify that work platform installed in Step 4A(7) is in place.

WARNING: DO NOT ENTER THE COLD STREAM NOZZLE UNTIL THRUST REVERSER SYSTEM IS LOCKED IN THE FORWARD-THRUST POSITION.

(6) Enter the cold stream duct.

(7) Carefully position sensor assembly on combustion outer case and engine fire seal (Ref. Fig. 402).

On engines without SB72-3732,
install attaching bolts ensuring that ground leads are fitted under bolt heads.

On engines with SB72-3732,
install attaching bolts ensuring that ground leads are fitted under bolt heads at the front end of No. 1 sensor, and the front left end of No. 6 sensor.

(8) Remove protective caps from all electrical connectors.

R CAUTION: ENSURE NEW GASKETS ARE INSTALLED WHENEVER SENSOR ASSEMBLY IS DISCONNECTED.

R ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO
R NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

R DO NOT TWIST THE TWO CONNECTORS WHEN TORQUE
R TIGHTENING.

(9) Ensure that electrical connectors are free from dirt, oil, or moisture, then install a new gasket at each connector.

NOTE: Apply a light coat of DC-4 Silicone Grease to the copper gasket. Avoid getting grease in the connector cavity or on the connector contacts.

(10) Connect electrical connectors and torque to a value of 60±10 lb in. Lock-wire connectors.

(11) Remove tags and close circuit breakers opened in Step 4A(1).

(12) Verify operation of affected fire detection system (Ref. 26-11-00).

(13) Install combustion section LH and RH side and upper fairings (Ref. 72-03-00).

(14) Remove working platform from cold stream duct.

(15) Remove thrust reverser mechanical locks installed in Step 4A(6).

(16) Remove and stow lockout pin and streamer installed in Step 4A(5).

(17) Close access panel opened in Step 4A(3).

(18) Remove warning tags installed in Step 4A(2).

G. Installation of Zone 3 Fire Detector Sensor Assembly

(1) Verify that circuit breakers opened in Step 4A(1) are open and tagged.

(2) Verify that warning tags installed in Step 4A(2) are in place.

(3) Verify that lockout pin installed in Step 4A(5) is in place.

(4) Verify that thrust reverser mechanical locks installed in Step 4A(6) are in place.

(5) Verify that work platform installed in Step 4A(7) is in place.

WARNING: DO NOT ENTER THE COLD STREAM NOZZLE UNTIL THRUST REVERSER SYSTEM IS LOCKED IN THE FORWARD-THRUST POSITION.

(6) Enter the cold stream duct.

(7) Carefully position sensor assembly on interservices fairing upper support structure and secure with quick-release fasteners.

(8) Remove protective caps from electrical connectors.

R CAUTION: ENSURE NEW GASKETS ARE INSTALLED WHENEVER SENSOR ASSEMBLY IS DISCONNECTED.

R ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO
R NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

R DO NOT TWIST THE TWO CONNECTORS WHEN TORQUE
R TIGHTENING.

R (9) Ensure that electrical connectors are free from dirt, oil, or moisture, then install a new gasket at each connector.

NOTE: Apply a light coat of DC-4 Silicone Grease to the copper gasket. Avoid getting grease in the connector cavity or on the connector contacts.

(10) Connect electrical connectors and torque to a value of 60±10 lb. in.

(11) Remove tags and close circuit breakers opened in Step 4A(1).

(12) Verify operation of affected fire detection system (Ref. 26-11-00).

(13) Install interservices fairing LH and RH front access panels (Ref. 72-03-00).

(14) Remove working platform from cold stream duct.

(15) Remove thrust reverser mechanical locks installed in Step 4A(6).

(16) Remove and stow lockout pin and streamer installed in Step 4A(5).

(17) Close access panel opened in Step 4A(3).

(18) Remove warning tags installed in Step 4A(2).

ENGINE COMBUSTION AND ZONE 3 FIRE DETECTORS - INSPECTION AND CHECK

1. General

The following procedure is applicable to all engines.

2. Equipment and Materials

Ohmmeter, Simpson PN 362, or equivalent

Ohmmeter leads (one lead terminating with Walter Kidde Plug PN 876635 and one terminating with Walter Kidde plug PN 876633, with protective caps covering plugs)

Copper Gaskets, Walter Kidde

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

R DC-4 Silicone Grease

3. Referenced Procedures

26-11-00	Fire Detection System - Adjustment
72-03-00	Gas Generator Fairing - Maintenance Practices
78-30-00	Thrust Reverser - Maintenance Practices

4. Inspection/Check

A. Sensor Element Resistance Check

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag following circuit breakers as applicable for particular engine:

THRUST REVERSE - ENG - 1 (H16), 2 (H17), or 3 (H18)

ENGINE - START CONT - ENG - 1 (E13), 2 (E14), or 3 (E15)

FIRE DETECTION -

LOOP A ALARM - ENG - 1 (K1), 2 (K2), or 3 (K3)

LOOP B ALARM - ENG - 1 (K5), 2 (K6), or 3 (K7)

MASTER ALARM PWR - ENG - 1 (J1), 2 (J2), or 3 (J3)

TEST (J5)FIRE BELL PWR (J6)

FIRE EXTINGUISHER -

ENG 1 - MAIN (C10) and ALTN (C11)

ENG 2 - MAIN (C12) and ALTN (C13)

ENG 3 - MAIN (C14) and ALTN (C15)

(2) On pilots center console, zone 210, install warning tags on applicable power control and thrust reverser levers, and on APU/GROUND AIR TO REVERSER HOLD SWITCHES.

(3) Gain access to applicable engine isolation valve by opening panel 511LB-3 for engine No. 1, 611LB-3 for engine No. 3, or 471AL for engine No. 2.

(4) Verify that isolation valve is in closed position (external valve arm in position C).

(5) Remove threaded lockout pin from stowed position. Install it through hole in external valve arm and screw securely into valve body; tag with REMOVE BEFORE FLIGHT streamer.

WARNING: DO NOT ENTER COLD STREAM NOZZLE UNTIL THRUST REVERSER IS LOCKED IN THE FORWARD-THRUST POSITION.

(6) Deactivate and tag thrust reverser and associated systems and install thrust reverser mechanical locks (Ref. 78-30-00).

(7) Position splitter area access work platform in cold stream collector nozzle, zone 415, 425, or 435.

(8) Enter cold stream duct and gain access to particular sensor by removing LH and RH side fairings for lower combustion zone (Ref. 72-03-00), LH and RH side and upper fairings for upper combustion zone (Ref. 72-03-00), or interservices fairing LH and RH front access panels for zone 3.

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE DISCONNECTING.
R DO NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

(9) Disconnect electrical connector at each end of sensor element. Remove protective caps from ohmmeter leads and install on cable connectors.

(10) Set ohmmeter to correct scale and use leads with special terminations to measure resistance from center contact of connector at one end of sensor to center contact of connector at other end of sensor. Ohmmeter scale and allowable resistance are shown in Table 201.

(11) Use ohmmeter to verify that there is no short between center contact of either connector and shell of sensor.

(12) Remove ohmmeter and leads.

(13) Remove protective caps from cable connectors and install on ohmmeter leads.

R CAUTION: ENSURE ELECTRICAL CONNECTORS ARE FREE FROM LIQUID
R AND/OR SOLID CONTAMINATION BEFORE CONNECTION. DO
R NOT CLEAN WALTER KIDDE CONNECTORS WITH CHLORINE
R BASED SOLVENTS.

R DO NOT TWIST THE CONNECTORS WHEN TORQUE
R TIGHTENING.

(14) Connect cable at each end of sensor using new copper gaskets. Torque connectors 60 ± 10 lb in. Lock-wire connectors.

R NOTE: Apply a light coat of DC-4 Silicone Grease to
R the copper gaskets. Avoid getting grease in the
R connector cavity or on the connector contacts.

(15) Close circuit breakers opened in Step (1).

(16) Verify operation of fire detection system (Ref. 26-11-00).

(17) Replace access panels and fairings removed in Step (8).

Sensor Resistance Measurement
Table 201

SENSOR	OHMMETER SCALE	RESISTANCE MAXIMUM OHMS
Lower Combustion Zone	HIGH	5.7
Upper Combustion Zone	HIGH	6.1
Zone 3 (Splitter)	LOW	2.7

NO. 2 ENGINE VERTICAL FIREWALL FIRE SENSOR ASSEMBLY REMOVAL AND INSTALLATION

1. Equipment and Materials

R Copper Gaskets, Walter Kidde

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

2. Referenced Procedure

26-11-00 Fire Detection System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag the following circuit breakers:

R FIRE DETECTION

R MASTER ALARM PWR - ENG 2 (J2)

R TEST (J5)

R FIREBELL PWR (J6)LOOP A ALARM ENG 2 (K2)

R LOOP B ALARM ENG 2 (K6)

R FIRE EXTINGUISHER

R ENG 2 MAIN (C12)

R ENG 2 ALTN (C13)

(2) Open lower cowl panel (lower left main cowl) on left side of engine, zone 433.

(3) Open lower cowl panel (lower right main cowl) on right side of engine, zone 434.

(4) Disconnect electrical connector at each end of lower sensor assembly (Ref. Fig. 401) and discard gaskets.

CAUTION: EXERCISE EXTREME CARE TO AVOID TWISTING, BENDING, KINKING, DENTING, OR OTHERWISE DAMAGING THE SENSING ELEMENTS.

(5) Release fasteners holding sensor assembly support tube to mounting brackets and remove assembly.

B. Installation

(1) Verify that circuit breakers opened in Step 3A(1) are open and tagged.

(2) Loosen all clamp screws to allow clamps to slide on tube.

(3) Install sensor assembly and fasten the end and intermediate fixed support brackets.

(4) Fasten adjustable support brackets.

(5) Tighten all clamp screws.

CAUTION: INSURE NEW GASKETS ARE INSTALLED WHENEVER ASSEMBLY IS DISCONNECTED.

(6) Install new copper gaskets at each electrical connector as follows:

(a) Insure that all parts are free of dirt, oil, and moisture.

(b) Slide gasket over sleeve of swivel nut end of sensing element.

(c) Insure that the socket receptacle has a gasket between the socket shell and the barrel.

(d) Assemble pin and socket connector.

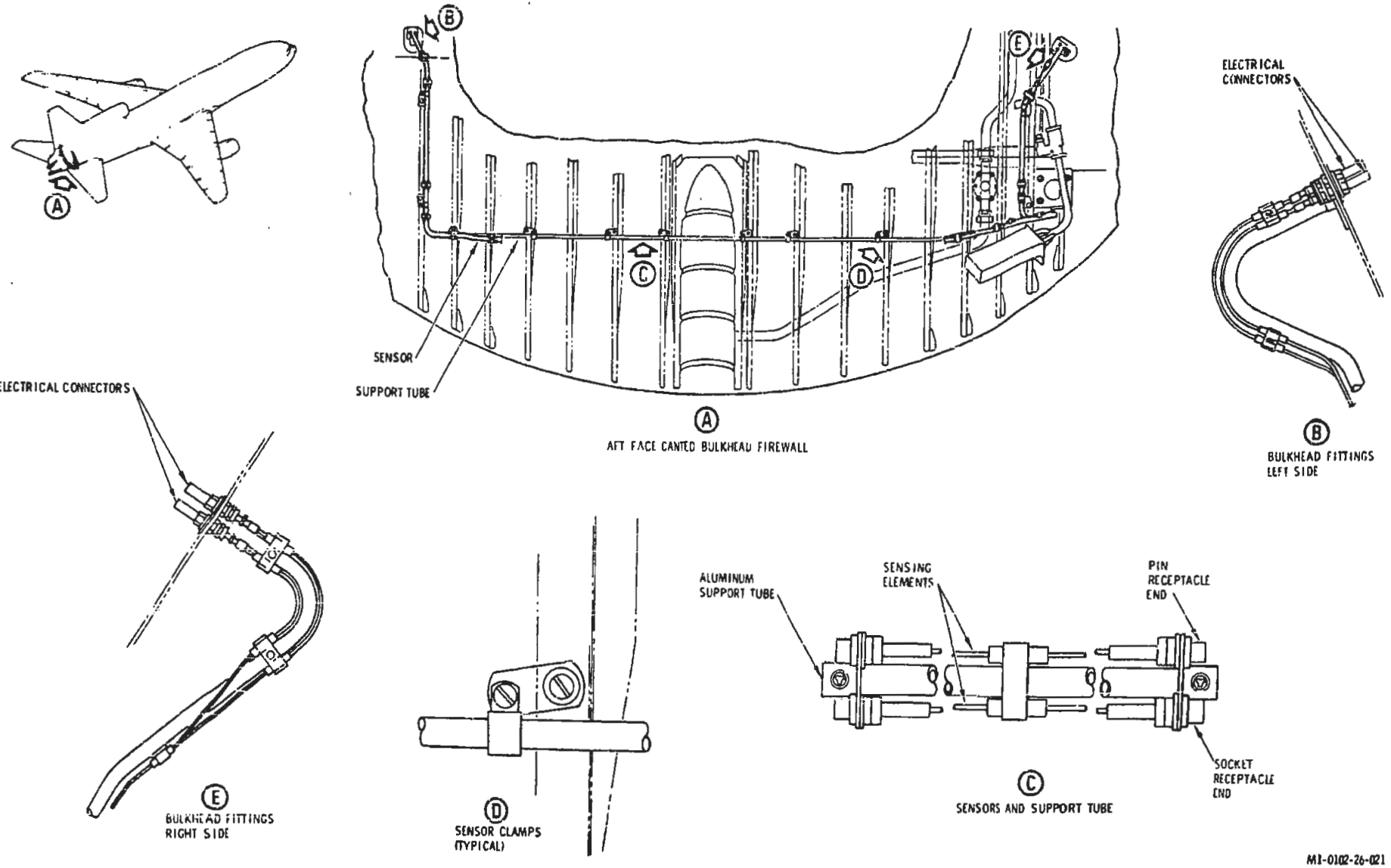
CAUTION: IN TORQUING THE CONNECTION, DO NOT TWIST THE TWO CONNECTORS.

(e) Torque connection 60 ± 10 lb in.

(7) Lock-wire all connectors.

R (8) Remove tags and close circuit breakers opened in Step
R 2A(1).

(9) Test No. 2 engine fire detection system (Ref. 26-11-00).



R No. 2 Engine Vertical Firewall Fire Sensor Assembly
R Removal and Installation
R Figure 401

EFFECTIVITY: ALL

001B

(10) Close and secure cowl panels.

R R NO. 2 ENGINE VERTICAL FIREWALL FIRE SENSOR ASSEMBLY INSPECTION AND CHECK

R 1. Equipment and Materials

R Ohmmeter, Simpson PN 362, or equivalent

R Ohmmeter leads (one lead terminating with Walter Kidde plug PN R 876635 and one terminating with Walter Kidde plug PN 876633, R with protective caps covering plugs)

R Copper Gaskets, Walter Kidde PN 209592, no equivalent

R Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, R or equivalent

R 2. Referenced Procedures

R 26-11-00 Fire Detection System - Adjustment and Test

R 71-12-01 LH and RH Lower Hinged Cowl - Servicing

R 3. Inspection/Check

R A. Sensor Element Resistance Check

R (1) On pilots overhead circuit breaker panel CB1, zone 210, R open and tag circuit breakers FIRE DETECTION - LOOP A R ALARM - ENG - 2 (K2) and LOOP B ALARM - ENG - 2 (K6).

R (2) Open left hinged cowl 433AL and right hinged cowl 434AR R (Ref. 71-12-01).

R CAUTION: DO NOT NICK OR SCRATCH CONNECTOR INTERFACE OR R SEALING SURFACES.

R (3) Disconnect electrical connector at each end of sensor R element. Remove protective caps from ohmmeter leads R and install on cable connectors.

R (4) Set ohmmeter to HIGH scale and use leads with special R terminations to measure resistance from center contact R of connector at one end of sensor to center contact of R connector at other end of sensor. Allowable resistance R is 13.3 ohms maximum.

R (5) Use ohmmeter to verify that there is no short between R center contact of either connector and shell of sensor.

(6) Remove ohmmeter and leads.

(7) Remove protective caps from cable connectors and install on ohmmeter leads.

(8) Connect cable at each end of sensor using new copper
R gaskets, torque connector 60 ± 10 lb in. Lock-wire
R connectors.

(9) Close circuit breakers opened in Step (1).

(10) Verify operation of fire detection system (Ref. 26-11-00).

(11) Close left and right hinged cowls.

MAIN LANDING GEAR WHEEL WELL FORWARD SENSOR ASSEMBLY REMOVAL AND INSTALLATION

1. General

Removal and installation procedures for the left and right main landing gear (MLG) wheel well forward sensor assembly are identical except for access to the sensors.

2. Equipment and Materials

R Copper Gaskets, Walter Kidde

R Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

3. Referenced Procedures

26-11-00 Fire Detection System - Adjustment and Test

32-12-00 Main Landing Gear Doors - Maintenance Practices

32-33-00 Main Landing Gear Door Actuation System - Maintenance Practices

WARNING: OBSERVE ALL WARNINGS AND CAUTIONS ASSOCIATED WITH OPERATION OF MLG DOORS.

BEFORE ENTERING MLG WHEEL WELL AREA, VERIFY THAT LANDING GEAR DOWNLOCK SAFETY PINS AND INBOARD DOOR SAFETY DEVICES ARE INSTALLED (REF. 32-12-00).

4. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breaker FIRE DETECTION - MASTER ALARM PWR - WHL WELL APU (J4).

(2) On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag circuit breakers WHEEL WELL FIRE DETECTOR - LOOP A (S1) and LOOP B (S2).

(3) To gain access to the right MLG wheel well compartment, zone 148, open right MLG inboard door, zone 742, (Ref. 32-33-00).

(4) To gain access to the left MLG wheel well compartment, zone 149, open left MLG inboard door, zone 732, (Ref. 32-33-00).

(5) Disconnect electrical connector from forward sensor assembly (Ref. Fig. 401) and discard gaskets.

CAUTION: AVOID TWISTING, BENDING, KINKING, DENTING, OR OTHERWISE DAMAGING THE SENSING ELEMENTS.

(6) Disconnect forward sensor assembly from aft sensor assembly.

(7) Release fasteners holding forward sensor assembly support tube to mounting brackets and remove complete assembly.

B. Installation

(1) Verify that circuit breakers opened in Steps 4A(1) and 4A(2) are open and tagged.

(2) Loosen clamp screws to allow clamps to slide on tube.

(3) Install sensor assembly and fasten end and intermediate fixed support brackets.

(4) Fasten adjustable support brackets.

(5) Tighten all clamp screws.

CAUTION: INSURE NEW GASKETS ARE USED WHEN EVER ASSEMBLY IS DISCONNECTED.

R (6) Install new copper gaskets at each electrical connector as follows (Ref. Fig. 401):

(a) Insure that all parts are free of dirt, oil, and moisture.

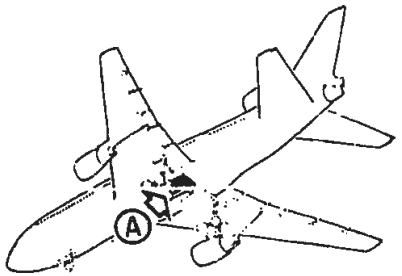
(b) Slide gasket over sleeve of swivel nut end of sensing element.

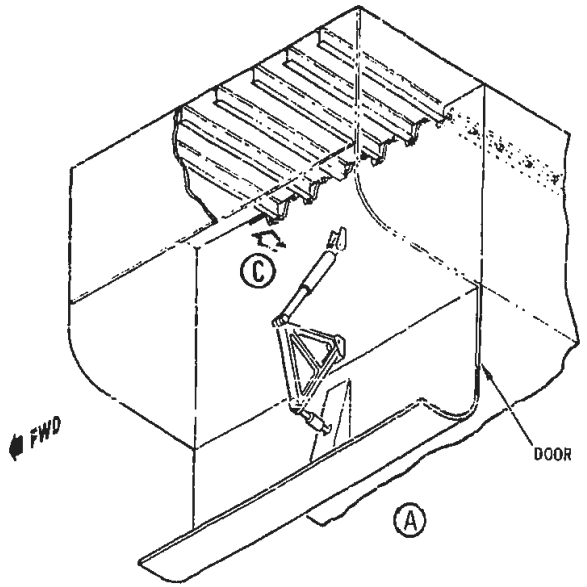
(c) Insure that the socket receptacle has a gasket between the socket shell and the barrel.

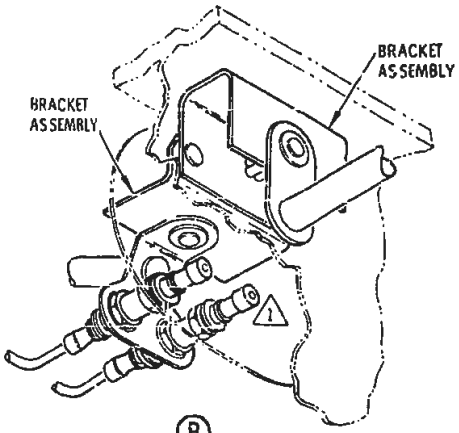
(d) Assemble pin and socket connector.

CAUTION: IN TORQUING THE CONNECTION, DO NOT TWIST THE TWO CONNECTORS.

R (e) Torque connection 60 + 10 lb. in.







WALTER KIDDE & COMPANY, INC.

Belleview, New Jersey

INSTALLATION INSTRUCTIONS:

CONTENTS. TWO (2) COPPER GASKETS P/N 209592

NOTE: USE ONE GASKET FOR EACH CONNECTION ASSEMBLY

1 PRIOR TO ASSEMBLY OF GASKET TO THE CONNECTOR MAKE CERTAIN THAT ALL PARTS ARE FREE OF DIRT, OIL AND MOISTURE
2 SLIDE THE GASKET OVER THE SLEEVE OF THE SWIVEL NUT END OF THE SENSING ELEMENT, FLEXIBLE CABLE, ELBOW OR PIN PLUG
3 THE SOCKET RECEPTACLE HAS A GASKET BETWEEN THE SOCKET SHELL AND THE BARREL
4 ASSEMBLE PIN AND SOCKET CONNECTOR
5 TORQUE THE JOINT TO A VALUE OF 50 TO 70 INCH POUNDS

CAUTION:

IN TORQUING THE CONNECTORS TOGETHER, CARE MUST BE EXERCISED TO PREVENT TWISTING OF THE TWO (2) CONNECTORS. THE ROUGH SURFACE OF GASKET PREVENTS TWISTING AT THE MATING SURFACES

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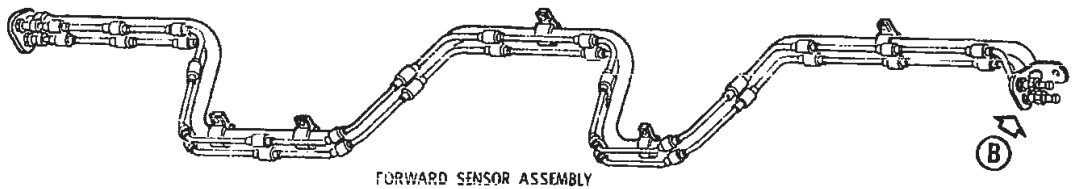
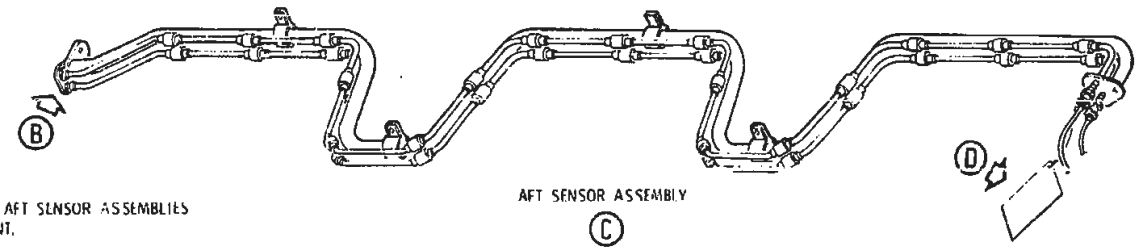


FORWARD SENSOR ASSEMBLY



AFT SENSOR ASSEMBLY
C

NOTE

1 THE FORWARD AND AFT SENSOR ASSEMBLIES JOIN AT THIS POINT.

C 887
M1-0100-26-032

R MLG Wheel Wells Forward Sensor Assembly
R Removal and Installation
R Figure 401

EFFECTIVITY: ALL

050

(7) Lock-wire electrical connector.

(8) Perform wheel well system test (26-11-00).

(9) Remove tags and close circuit breakers opened in Steps 4A(1) and 4A(2).

(10) Close and secure MLG inboard door.

MAIN LANDING GEAR WHEEL WELL FORWARD SENSOR ASSEMBLY INSPECTION AND CHECK

1. General

R The left and right main landing gear (MLG) wheel well forward sensor assembly installations are the identical except for access to the sensors.

2. Equipment and Materials

Ohmmeter, Simpson PN 362, or equivalent

Ohmmeter leads (one lead terminating with Walter Kidde plug PN 876635 and one terminating with Walter Kidde plug PN 876633, with protective caps covering plugs

Copper Gaskets, Walter Kidde PN 209592, no equivalent

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

3. Referenced Procedures

26-11-00	Fire Detection System - Adjustment and Test
32-12-00	Main Landing Gear Doors - Maintenance Practices
32-33-00	Main Landing Gear Door Actuation System - Maintenance Practices

4. Inspection/Check

A. Sensor Element Resistance Check

WARNING: OBSERVE ALL WARNINGS AND CAUTIONS ASSOCIATED WITH OPERATION OF MLG DOOR.

BEFORE ENTERING MLG WHEEL WELL AREA, VERIFY THAT LANDING GEAR DOWNLOCK SAFETY PINS AND INBOARD DOOR SAFETY DEVICES ARE INSTALLED (REF. 32-12-00).

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE DETECTION - MASTER ALARM PWR - WHL WELL - APU (J4) and FIRE DETECTION - TEST (J5).

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag circuit breakers WHEEL WELL - FIRE DETECTOR - LOOP A (S1) and LOOP B (S2).

(2) Open MLG inboard door zone 732 (left), zone 742 (right) (Ref. 32-33-00).

R CAUTION: DO NOT NICK OR SCRATCH CONNECTOR INTERFACE OR SEALING SURFACES.

(3) Disconnect electrical connector at each end of sensor element. Remove protective caps from ohmmeter leads and install on cable connectors.

(4) Set ohmmeter to HIGH scale and use leads with special terminations to measure resistance from center contact of connector at one end of sensor to center contact of connector at other end of sensor. Allowable resistance is 5.9 ohms maximum.

(5) Use ohmmeter to verify that there is no short between center contact of either connector and shell of sensor.

(6) Remove ohmmeter and leads.

(7) Remove protective caps from cable connectors and install on ohmmeter leads.

R (8) Connect cable at each end of sensor using new copper
R gaskets, torque connectors 60 ± 10 lb in. Lock-wire connectors.

(9) Close circuit breakers opened in Step (1).

(10) Verify operation of fire detection system (Ref. 26-11-00).

(11) Close MLG inboard door.

MAIN LANDING GEAR WHEEL WELL AFT SENSOR ASSEMBLY REMOVAL AND INSTALLATION

1. General

Removal and installation procedures for the left and right main landing gear (MLG) wheel well aft sensor assemblies are identical except for access to the sensors.

2. Equipment and Materials

R Copper Gaskets, Walter Kidde

R Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

3. Referenced Procedures

26-11-00 Fire Detector System - Adiustment and Test

32-12-00 Main Landing Gear Doors - Maintenance Practices

32-33-00 Main Landing gear Door Actuation System - Maintenance Practices

WARNING: OBSERVE ALL WARNINGS AND CAUTIONS ASSOCIATED WITH OPERATION OF MLG DOORS.

BEFORE ENTERING MLG WHEEL WELL AREA, VERIFY THAT LANDING GEAR DOWNLOCK SAFETY PINS AND INBOARD DOOR SAFETY DEVICES ARE INSTALLED (REF. 32-12-00).

4. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breaker FIRE DETECTOR - MASTER ALARM PWR - WHL WELL APU (J4).

(2) On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag circuit breakers WHEEL WELL - FIRE DETECTOR - LOOP A (S1) and B (S2).

(3) To gain access to the MLG wheel well compartment, zone 148 (left) or 149 (right), open inboard door (Ref. 32-33-00).

(4) Disconnect electrical connector from aft sensor assembly (Ref. Fig. 401) and discard gaskets.

R CAUTION: AVOID TWISTING, BENDING, KINKING, DENTING, OR OTHERWISE DAMAGING THE SENSING ELEMENTS.

(5) Disconnect aft sensor assembly from forward sensor assembly.

(6) Release fasteners holding aft sensor assembly support tube to mounting brackets and remove complete assembly.

B. Installation

(1) Verify that circuit breakers opened in Steps 4A(1) and 4A(2) are open and tagged.

(2) Loosen clamp screws to allow clamps to slide on tube.

(3) Install sensor assembly and fasten end and intermediate fixed support brackets.

(4) Fasten adjustable support brackets.

(5) Tighten all clamp screws.

R CAUTION: INSURE NEW GASKETS ARE INSTALLED WHENEVER ASSEMBLY
R IS DISCONNECTED.

R (6) Install new copper gaskets at each electrical connector
R as follows (Ref. Fig. 401):

R (a) Ensure that all parts are free of dirt, oil, and
R moisture.

R (b) Slide gasket over sleeve of swivel nut end of
R sensing element.

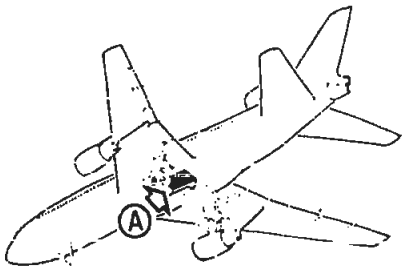
R (c) Ensure that the socket receptacle has a gasket
R between the socket shell and the barrel. (d)
R Assemble pin and socket connector.

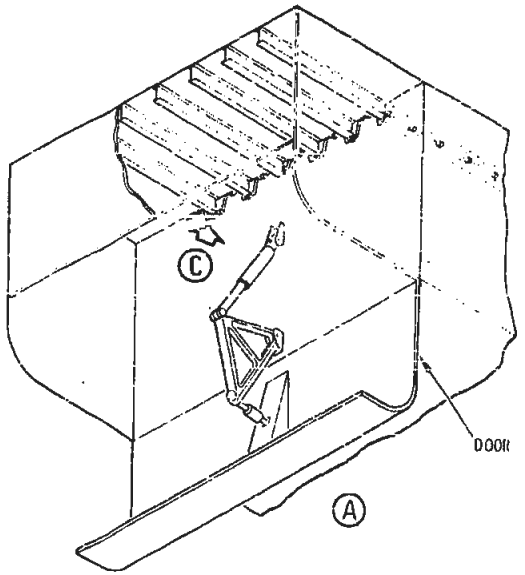
R CAUTION: IN TORQUING THE CONNECTION, DO NOT TWIST THE
R TWO CONNECTORS.

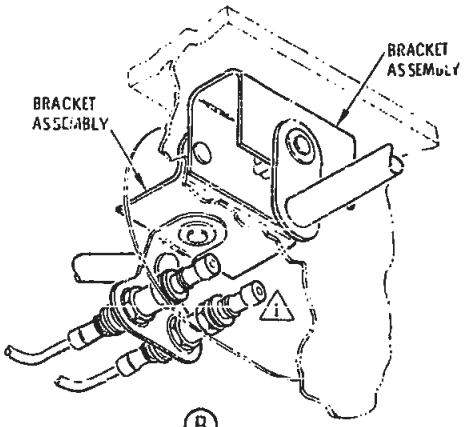
R (e) Torque connection 60 ± 10 lb in.

(7) Lock-wire electrical connector.

(8) Perform wheel well system test (Ref. 26-11-00).







WALTER KIDDE & COMPANY, INC.

Belleview, New Jersey

INSTALLATION INSTRUCTIONS:

CONTENTS TWO (2) COPPER GASKETS P/N 209592

NOTE: USE ONE GASKET FOR EACH CONNECTION ASSEMBLY

1. PRIOR TO ASSEMBLY OF GASKET TO THE CONNECTOR MAKE CERTAIN THAT ALL PARTS ARE FREE OF DIRT, OIL AND MOISTURE
2. SLIDE THE GASKET OVER THE SLEEVE OF THE SWIVEL NUT END OF THE SENSING ELEMENT FLEXIBLE CABLE ELBOW OR PIN PLUG
3. THE SOCKET (RECEPTACLE HAS A GASKET BETWEEN THE SOCKET SHELL AND THE BARREL
4. ASSEMBLE PIN AND SOCKET CONNECTOR
5. TORQUE THE JOINT TO A VALUE OF 50 TO 70 INCH POUNDS

CAUTION:

IN TORQUING THE CONNECTORS TOGETHER CARE MUST BE EXERCISED TO PREVENT TWISTING OF THE TWO (2) CONNECTORS. THE ROUGH SURFACE OF GASKET PREVENTS TWISTING AT THE MATING SURFACES

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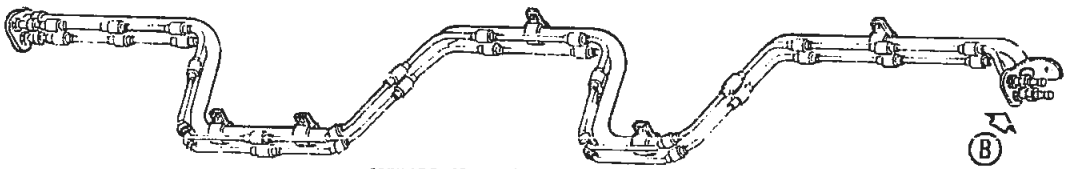
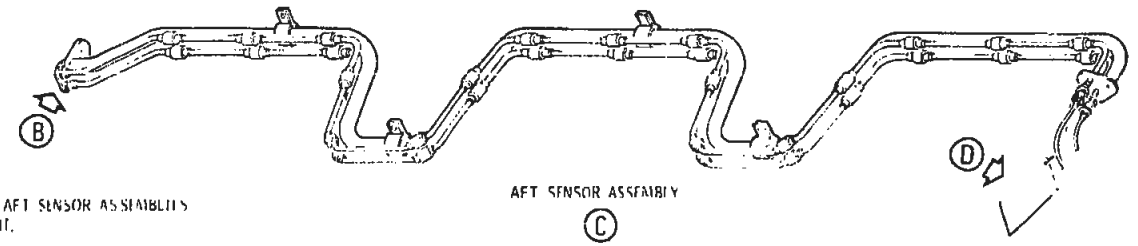


FORWARD SENSOR ASSEMBLY



AFT SENSOR ASSEMBLY

C

NOTE

1 THE FORWARD AND AFT SENSOR ASSEMBLIES JOIN AT THIS POINT.

G 887
A11-0100-26-032

MLG Wheel Wells Aft Sensor Assembly - Removal and Installation
Figure 401

(9) Remove tags and close circuit breakers opened in Steps 4A(1) and 4A(2).

(10) Close and secure MLG inboard door.

MAIN LANDING GEAR WHEEL WELL AFT SENSOR ASSEMBLY INSPECTION AND CHECK

1. General

The left and right main landing gear (MLG) wheel well aft sensor assembly installations are the same except for access to the sensors.

2. Equipment and Materials

Ohmmeter, Simpson PN 362, or equivalent

Ohmmeter leads (one lead terminating with Walter Kidde plug PN 876635 and one terminating with Walter Kidde plug PN 876633, with protective caps covering plugs

R Copper Gaskets, Walter Kidde

Lock-wire, Fed Spec QQ-W-390, Condition A, 0.020-inch diameter, or equivalent

3. Referenced Procedures

26-11-00	Fire Detection System - Adjustment and Test
32-12-00	Main Landing Gear Doors - Maintenance Practices
32-33-00	Main Landing Gear Door Actuation System - Maintenance Practices

4. Inspection/Check

A. Sensor Element Resistance Check

WARNING: OBSERVE ALL WARNINGS AND CAUTIONS ASSOCIATED WITH OPERATION OF MLG DOOR. BEFORE ENTERING MLG WHEEL WELL AREA, VERIFY THAT LANDING GEAR DOWNLOCK SAFETY PINS AND INBOARD DOOR SAFETY DEVICES ARE INSTALLED (REF. 32-12-00).

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE DETECTION - MASTER ALARM PWR - WHL WELL - APU (J4) and FIRE DETECTION - TEST (J5).

On Flight Engineer/Second Officers, aft circuit breaker panel CB3, zone 215, open and tag circuit breakers WHEEL WELL - FIRE DETECTOR - LOOP A (S1) and LOOP B (S2).

(2) Open MLG inboard door zone 732 (left), zone 742 (right) (Ref. 32-33-00).

CAUTION: DO NOT NICK OR SCRATCH CONNECTOR INTERFACE OR SEALING SURFACES.

(3) Disconnect electrical connector at each end of sensor element. Remove protective caps from ohmmeter leads and install on cable connectors.

(4) Set ohmmeter to HIGH scale and use leads with special terminations to measure resistance from center contact of connector at one end of sensor to center contact of connector at other end of sensor. Allowable resistance is 6.8 ohms maximum.

(5) Use ohmmeter to verify that there is no short between center contact of either connector and shell of sensor.

(6) Remove ohmmeter and leads.

(7) Remove protective caps from cable connectors and install on ohmmeter leads.

R R (8) Connect cable at each end of sensor using new copper gaskets, torque connectors 60 ± 10 lb in. Lock-wire connectors.

(9) Close circuit breakers opened in Step (1).

(10) Verify operation of fire detection system (Ref. 26-11-00).

(11) Close MLG inboard door.

R WHEEL WELL FIRE TEST PANEL - REMOVAL AND INSTALLATION

R 1. General

R The Wheel Well Fire Test panel is located on the upper right
R hand corner of FE/SO panel, zone 215.

R 2. Referenced Procedure

R 26-11-00 Fire Detection System - Adjustment and Test

R 3. Removal/Installation

R A. Removal

R (1) On pilots overhead circuit breaker panel CB1, zone 210,
R open and tag the following circuit breakers:

R FIRE DETECTION

R WHL WELL APU (J4)

R TEST (J5)

R FIREBELL PWR (J6)

R (2) On Flight Engineer/Second Officers aft circuit breaker
R panel CB3, zone 215, open and tag the following circuit
R breakers:

R WHEEL WELL FIRE DETECTOR

R LOOP A (S1)

R LOOP B (S2)

R (3) Release four fasteners on front of WHEEL WELL FIRE TEST
R panel.

R (4) Pull panel forward and disconnect electrical connector
R from rear of panel.

R B. Installation

R (1) Verify that circuit breakers opened in Steps 3A(1) and
R 3A(2) are open and tagged.

R (2) Connect electrical connector at rear of panel.

R R (3) Move panel into place and secure with four fasteners on front of panel.

R R (4) Remove tags and close circuit breakers opened in Steps 3A(1) and 3A(2).

R R (5) Verify operation of fire detection system (Ref. 26-11-00).

R FIRE DETECTION LOOP TEST PANEL - REMOVAL AND INSTALLATION

R 1. Referenced Procedures

R 26-11-00 Fire Detection System - Adjustment and Test

R 2. Removal/Installation

R A. Removal

R (1) On pilots overhead circuit breaker panel CB1, zone 210,
R open and tag the following circuit breakers:

R LOOP A ALARM ENG 1 (K1), 2 (K2), 3 (K3)

R LOOP A ALARM APU (K4)

R LOOP B ALARM ENG 1 (K5), 2 (K6), 3 (K7)

R LOOP B APU (K8)

R TEST (J5)

R FIREBELL PWR (J6)

R MASTER ALARM PWR ENG 1 (J1), 2 (J2), 3 (J3)

R WHL WELL APU (J4)

R APU FIRE SHUTDOWN (J7)

R APU FIRE DETECT-MASTER ALARM PWR (D18)

R APU FIRE DETECT-ALARM LOOP A (D16), B (D17)

R (2) Locate FIRE DETECTION LOOP TEST panel at top of center
R of FE/SO panel.

R (3) Loosen hold down screws and remove panel.

R (4) Disconnect electrical connectors from panel.

R B. Installation

R (1) Verify that circuit breakers opened in Step 2A(1) are
R open and tagged.

R (2) Reconnect electrical connectors to FIRE DETECTION LOOP
R TEST panel.

R (3) Reinstall FIRE DETECTION LOOP TEST panel in top center
R of FE/SO panel.

R (4) Tighten hold down screws.

R (5) Close circuit breakers opened in Step 2A(1).

R (6) Verify operation by performing adjustment and test
R procedure (Ref. 26-11-00).

LOWER COMPARTMENT SMOKE AND OVERHEAT DETECTION SYSTEM DESCRIPTION AND OPERATION

1. General

The galley smoke and overheat detection system provides aural and visual indications of smoke condition in the galley and an overheat condition in the galley oven ducts (Ref. Fig. 1 and Fig. 2).

A smoke detector and a smoke detector control amplifier are located in the galley ceiling forward of the lift, left of the aircraft centerline, zone 135. Visual indication is provided by a GALLEY SMOKE indicator light on the Flight Engineer/Second Officers upper panel, zone 215. Aural indication is provided by a tone from the aural warning box. The box is located under the Flight Engineer/Second Officers table (Ref. 33-18-00).

A GALLEY SMOKE two-pole center-on detector switch in the Flight Engineer/Second Officers upper panel tests the galley smoke detection system. The switch also turns off the aural warning before smoke elimination.

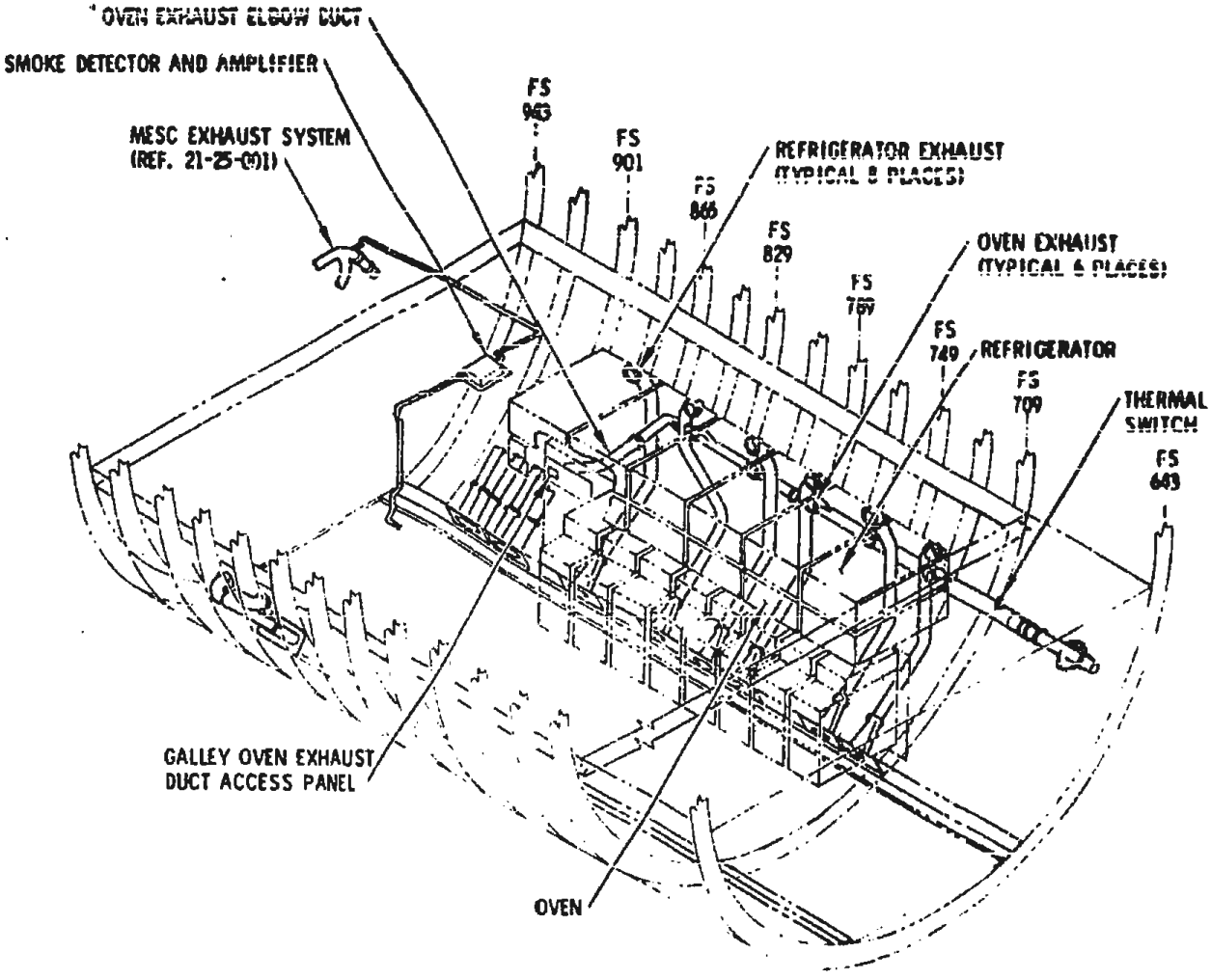
R The smoke detector has an air inlet tube and an air outlet tube.
R The air outlet tube is connected to the MESC ventilation air exhaust duct. Galley air is continuously drawn through the detector.

A galley oven exhaust duct overheat warning circuit also provides visual and aural warning in the galley and the Flight Engineer/Second Officers station, zones 215 and 132. The oven EXHAUST DUCT OVERHEAT ALARM SILENCE and ALARM TEST switchlights are mounted on the emergency power disconnect panel on the right cheek aft of the galley compartment door, zone 132. The oven exhaust duct overheat warning bell is in the ceiling inboard of the galley entry, zone 135. The warning bell cutout relay is in the mid electrical service center, zone 137.

R An access panel to the galley oven exhaust duct is installed below the rearmost oven. The access enables the use of the CO2
R extinguisher to put out a suspected fire in the duct when the galley alarms are actuated.

2. Operation

Detection of galley smoke and oven duct overheat is automatic when the circuit breaker is in (Ref. Fig. 3).



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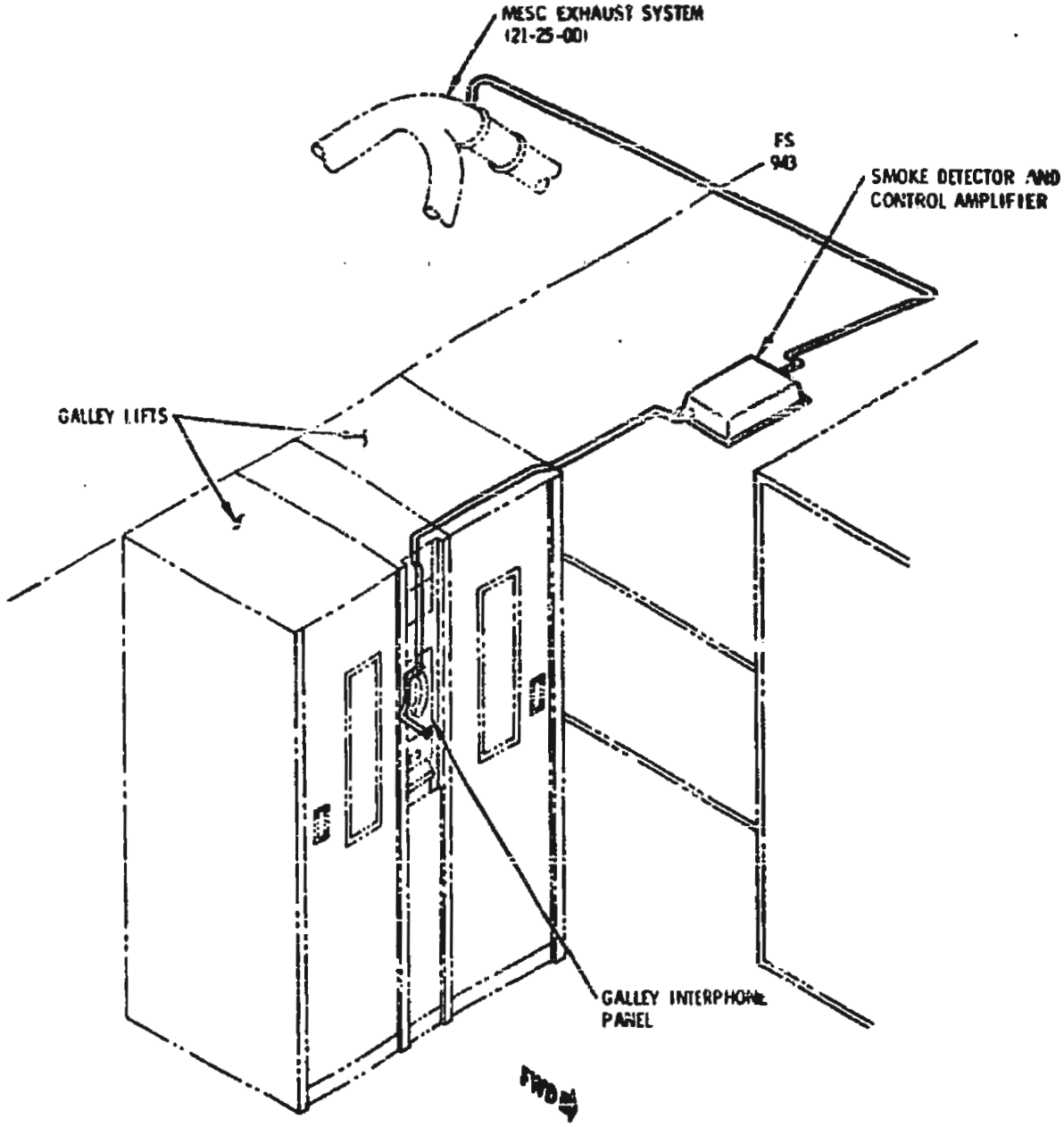
R Galley Oven Ducts Overheat and Smoke Detectors
R Figure 1



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R
R

Smoke Detector
Figure 2

R Negative air pressure from the MESC ventilation air exhaust duct
R draws galley air through the smoke detector. A constant light
R source is reflected as smoke passes through the detector
R reflecting light onto a photo cell. Smoke Detector output
R voltage increases to the detector control amplifier energizing
R its relay. The relay circuit activates smoke detection visual
R and aural warnings. GALLEY SMOKE indicator light flashes on and
R off, and the aural warning box emits an alternating tone.

When smoke density drops to a predetermined level, the photocell output voltage decreases and the smoke detector control amplifier turns off all alarm signals and goes to a standby condition.

The aural warning tone can be turned off before elimination of the smoke or overheat condition by momentarily placing the GALLEY SMOKE switch in the HORN CUTOUT position.

Galley oven duct overheat (500 degrees F) closes a thermal switch and energizes the aural and visual warnings in the galley and the flight station. The light in the galley remains on
R until either the overheat condition disappears or the ALARM TEST
R switch is released.

The smoke detection system is tested by holding the GALLEY SMOKE switch in the TEST position. A secondary light source in the detector is activated to simulate smoke and cause an increase in output voltage from the detector. The output voltage energizes the circuitry and activates the alarm circuits. The GALLEY SMOKE detector switch is a two-pole, double-throw switch with a center ON position and momentarily ON at both extremes.

The oven duct overheat circuit is tested in the galley by depressing the galley EXHAUST DUCT OVERHEAT ALARM TEST switchlight. Depressing the switchlight will actuate the bell and light the DUCT OVHT light in the galley.

Depressing the switchlight also initiates the aural warning unit and lights the GALLEY SMOKE light on the Flight Engineer/Second Officers panel.

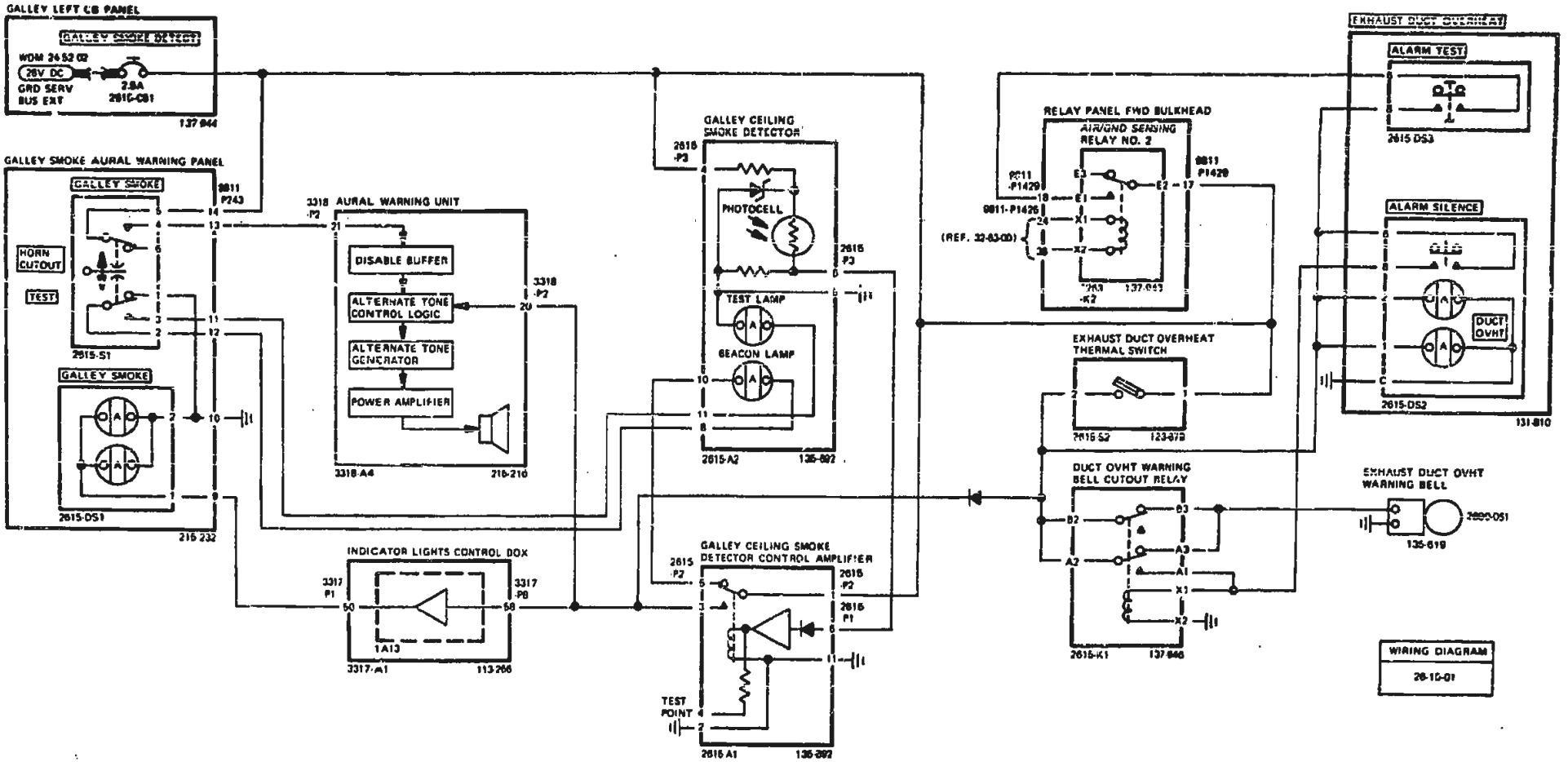
3. Galley Smoke Detector

A. Description and Operation

The galley smoke detector has a shock-mounted base to which the following are secured:

A group of solid-state electronic components

A labyrinth and tube assembly with a potted photocell



R Galley Smoke and Overheat Detection System Electrical Schematic
R Figure 3

Two light sources

A connector

A perforated cage assembly

When an input voltage is applied, a beacon lamp provides a constant source of light. When air containing approximately 10 percent of smoke density passes through the galley smoke detector, light is reflected from the constant source onto the photocell. The light causes an increase in output voltage from the photocell.

A test light is provided which, when energized, directs its light beam directly onto the photocell. The test light produces a photocell output similar to the smoke-reflected light beam.

4. Smoke Detector Control Amplifier

A. Description and Operation

The smoke detector control amplifier consists of a six-channel, diode-mixing network into a two-stage current transistor amplifier operating a relay with associated control circuitry. Two amplifier connectors are provided: one for signal input and one for power and output connections.

The smoke detector control amplifier remains in a standby (no output condition) until it receives an input signal of sufficient magnitude to actuate the alarm relay. The amplifier accepts a signal from the galley smoke detector which it current-amplifies to a magnitude sufficient to operate a 28V dc alarm signal. An input signal of 14 (±1)V dc actuates the alarm relay. An input signal drop to 10 (±1)V dc clears the alarm.

LOWER COMPARTMENT SMOKE AND OVERHEAT DETECTION SYSTEM - FAULT ISOLATION

1. General

R The diagrams and schematics in this section can be used for fault isolation any time a fault is reported or suspected. The PREREQUISITES listed at the top of each fault isolation diagram must be satisfied prior to starting fault isolation. Uncommon abbreviations are defined on the using fault code diagram or schematic.

R If the flight crew reports a trouble using a fault code number, the code number can be found in the Fault Isolation Reference Table in the Chapter 26 Fault Code Index. The index specifies the exact maintenance manual section, fault isolation diagram, and block number on the diagram where fault isolation should start. Schematics are included at the end of the section to supplement the fault code diagrams or as an aid in isolating a problem not covered on the diagrams.

R Refer to the Maintenance Manual Introduction for a more detailed discussion of the Fault Isolation Reporting Method (FIRM) and use of fault isolation diagrams/schematics.

2. Fault Isolation/Identification

Table 101 is a list of all fault isolation data in this section of the manual.

Lower Compartment Smoke and Overheat Detection Fault Isolation
Table 101

FIGURE	TITLE
101	Lower Compartment Smoke and Overheat Detection System Component Locator Diagram
102	Lower Compartment Smoke and Overheat Detection System Component Locator
103	Galley Smoke Detection Checkout
104	Oven Duct Overheat Checkout
SCHEM 1	Smoke Detection and Duct Overheat Schematic

COMPONENT	QTY	AREA/ACCESS	REFERENCE
AMPLIFIER – SMOKE DETECTOR CONTROL	1	GALLEY/822	26–15–02
PANEL – SMOKE DETECTOR	1	FLT STA FE/SO PANEL	26–15–99
SMOKE DETECTOR FWD CARGO	4	FWD CARGO COMPARTMENT/ 821	26–15–09
UNIT – AURAL WARNING	1	FLT STA/BELOW FE/SO DESK	31–22–03

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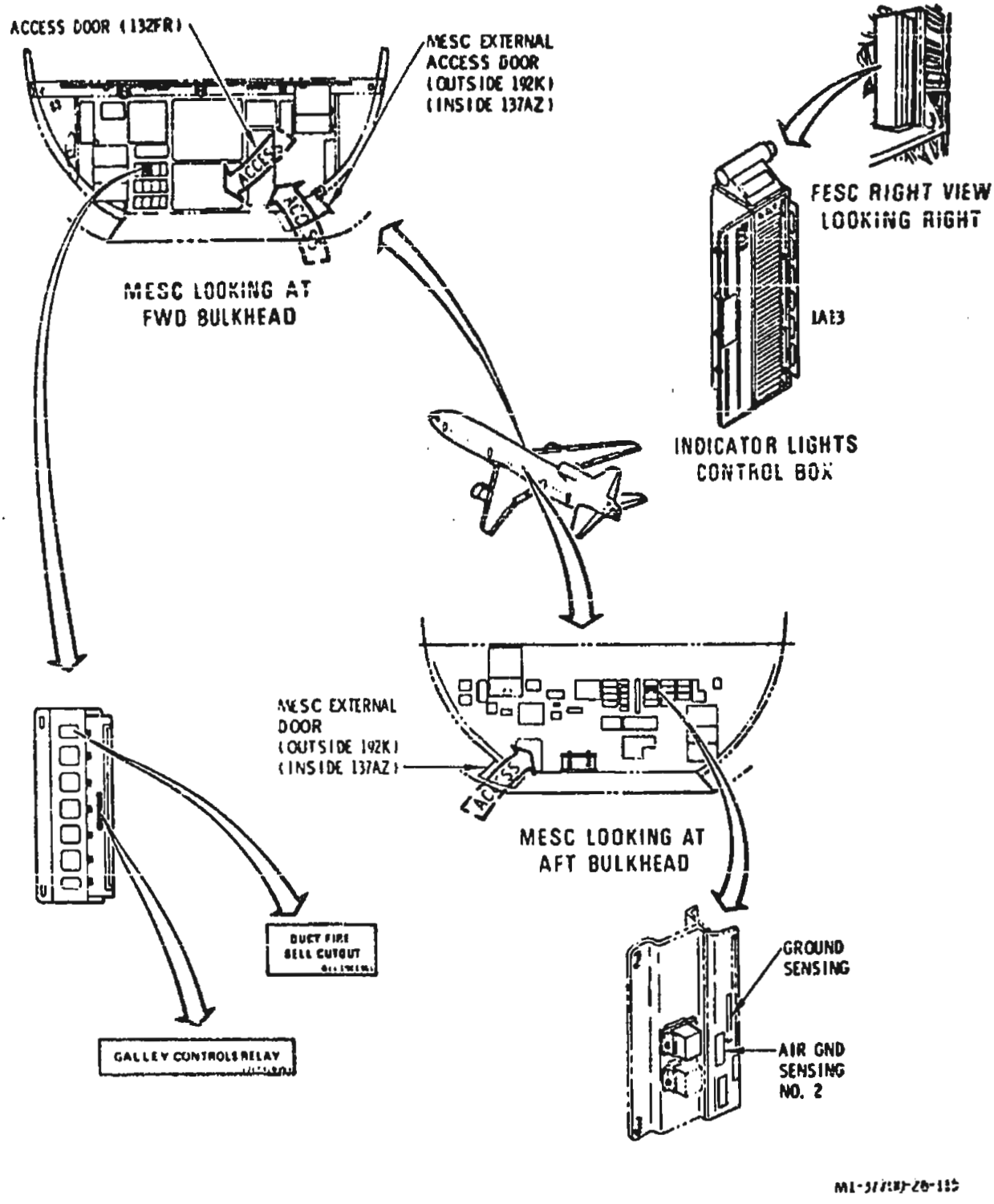
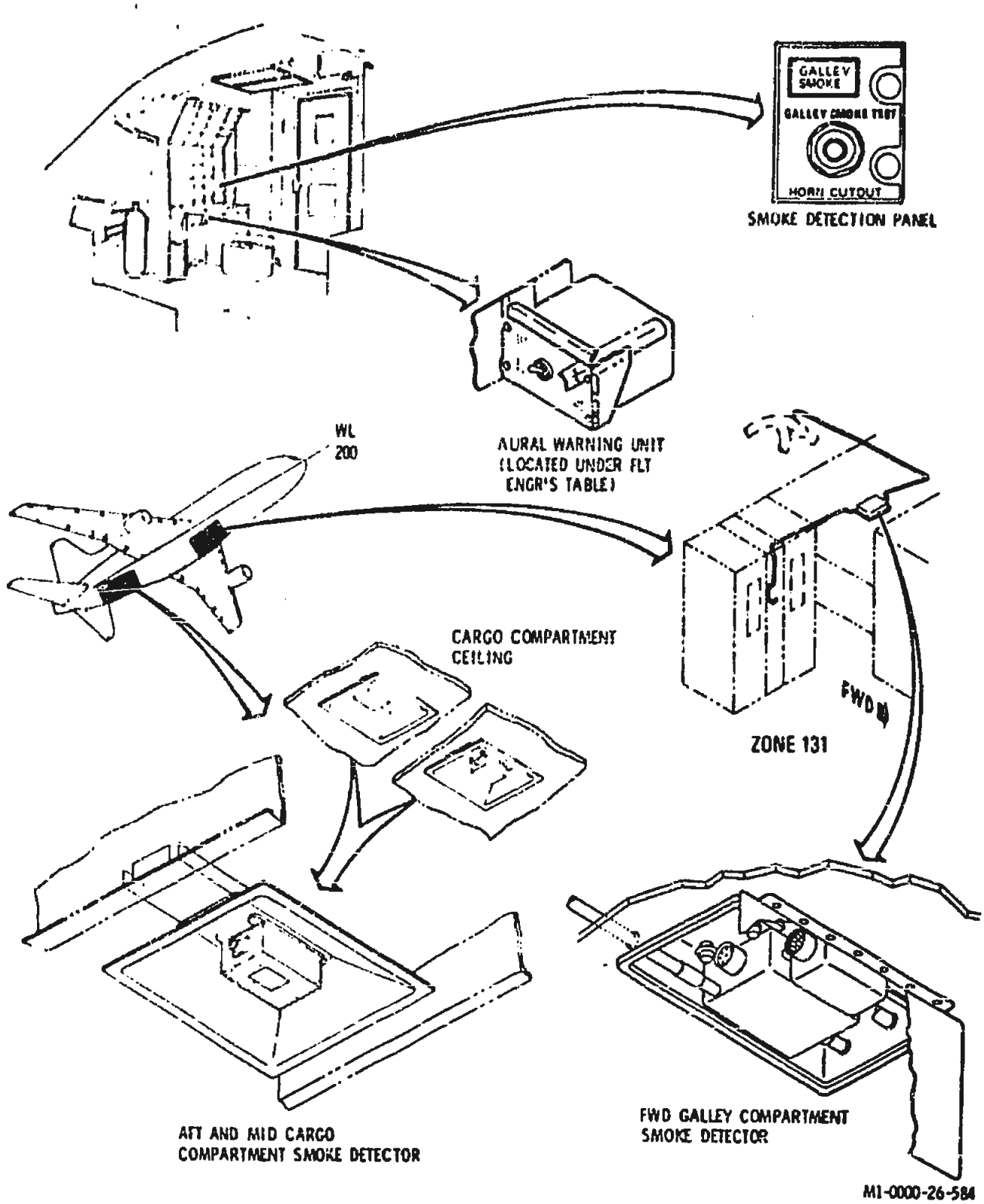
R Lower Compartment Smoke and Overheat Detection System Component
R Locator Diagram
R Figure 101


ACCESS DOOR (132FR)
MESC EXTERNAL ACCESS DOOR (OUTSIDE 192K) (INSIDE 137AZ)
MESC LOOKING AT FWD BULKHEAD
FESC RIGHT VIEW LOOKING RIGHT
INDICATOR LIGHTS CONTROL BOX
MESC EXTERNAL DOOR (OUTSIDE 192K) (INSIDE 137AZ)
MESC LOOKING AT AFT BULKHEAD
DUCT FIRE BELL CUTOUT
GALLEY CONTROLS RELAY
GROUND SENSING
AIR GND SENSING NO. 2

R Lower Compartment Smoke and Overheat Detection System Component Locator
R Figure 102 (Sheet 1)

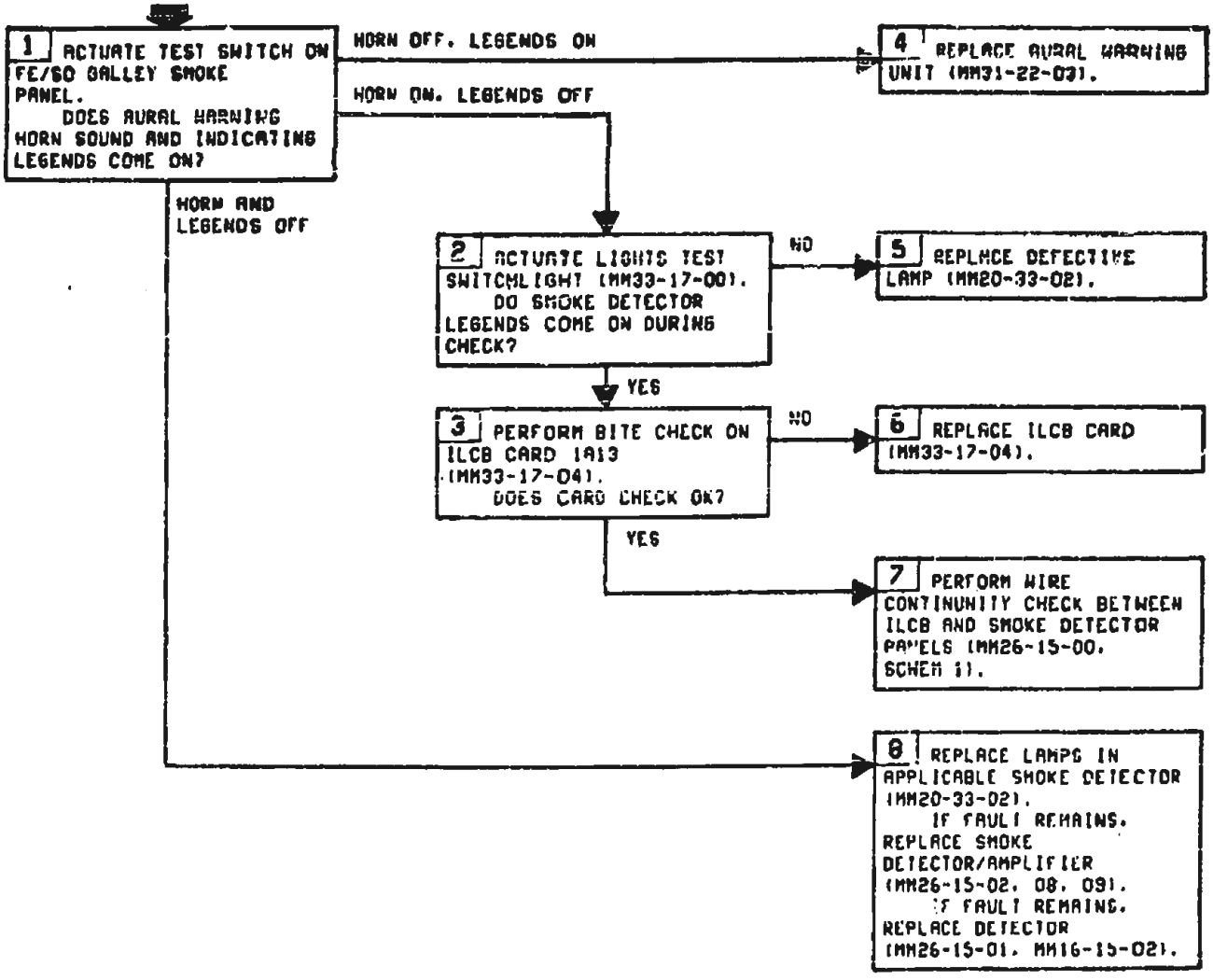
EFFECTIVITY: ALL



R Lower Compartment Smoke and Overheat Detection System Component
R Locator
R Figure 102 (Sheet 2)

GALLEY
SMOKE DETECTOR
CHECKOUT

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CLOSE CB'S: CB1-L6,L7,L8,L9,L10 AND L1
GALLEY LEFT CB PANEL - 22E


1 ACTUATE TEST SWITCH ON FE/GO GALLEY SMOKE PANEL. DOES AURAL WARNING HORN SOUND AND INDICATING LEGENDS COME ON?
HORN OFF, LEGENDS ON
4 REPLACE AURAL WARNING UNIT (MM31-22-03).
HORN ON, LEGENDS OFF
HORN AND LEGENDS OFF
2 ACTUATE LIGHTS TEST SWITCHLIGHT (MM33-17-00). DO SMOKE DETECTOR LEGENDS COME ON DURING CHECK?
NO
5 REPLACE DEFECTIVE LAMP (MM20-33-02).
YES
3 PERFORM BITE CHECK ON ILCB CARD 1A13 (MM33-17-04). DOES CARD CHECK OK?
NO
6 REPLACE ILCB CARD (MM33-17-04).
YES
7 PERFORM WIRE CONTINUNITY CHECK BETWEEN ILCB AND SMOKE DETECTOR PANELS (MM26-15-00, SCHEM 1).
8 REPLACE LAMPS IN APPLICABLE SMOKE DETECTOR (MM20-33-02). IF FAULT REMAINS, REPLACE SMOKE DETECTOR/AMPLIFIER (MM26-15-02, 08, 09). IF FAULT REMAINS, REPLACE DETECTOR (MM26-15-01, MM16-15-02).

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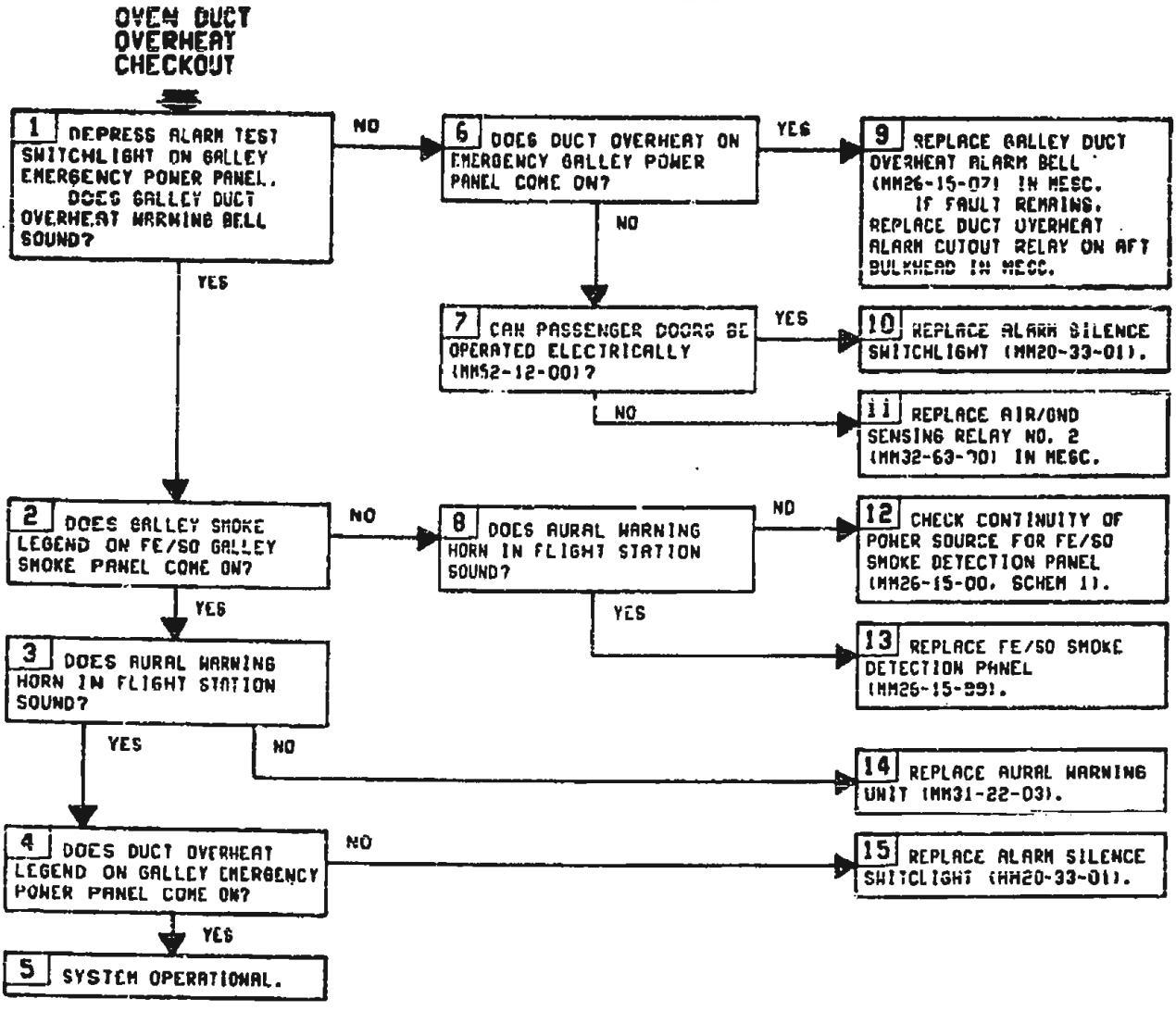
R Galley Smoke Detection Checkout
R Figure 103

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CIRCUIT BREAKERS:
CLOSE CB'S: CB1-L6, L7, L8, L9, L10, AND L11
GALLEY LEFT CB PANEL-22E
ANNUNCIATOR LEGEND TEST 8000


OVEN DUCT OVERHEAT CHECKOUT
1 DEPRESS ALARM TEST SWITCHLIGHT ON GALLEY EMERGENCY POWER PANEL. DOES GALLEY DUCT OVERHEAT WARNING BELL SOUND?
NO
YES
6 DOES DUCT OVERHEAT ON EMERGENCY GALLEY POWER PANEL COME ON?
YES
NO
9 REPLACE GALLEY DUCT OVERHEAT ALARM BELL (MM26-15-07) IN MESC. IF FAULT REMAINS, REPLACE DUCT OVERHEAT ALARM CUTOUT RELAY ON AFT BULKHEAD IN MESC.
7 CAN PASSENGER DOORS BE OPERATED ELECTRICALLY (MM52-12-00)?
YES
10 REPLACE ALARM SILENCE SWITCHLIGHT (MM20-33-01).
NO
11 REPLACE AIR/GND SENSING RELAY NO. 2 (MM32-63-10) IN MESC.
2 DOES GALLEY SMOKE LEGEND ON FE/SO GALLEY SMOKE PANEL COME ON?
NO
YES
8 DOES AURAL WARNING HORN IN FLIGHT STATION SOUND?
NO
YES
12 CHECK CONTINUITY OF POWER SOURCE FOR FE/SO SMOKE DETECTION PANEL (MM26-15-00, SCHEM 1).
13 REPLACE FE/SO SMOKE DETECTION PANEL (MM26-15-99).
3 DOES AURAL WARNING HORN IN FLIGHT STATION SOUND?
YES
NO
14 REPLACE AURAL WARNING UNIT (MM31-22-03).
4 DOES DUCT OVERHEAT LEGEND ON GALLEY EMERGENCY POWER PANEL COME ON?
NO
15 REPLACE ALARM SILENCE SWITCLIGHT (MM20-33-01).
YES
5 SYSTEM OPERATIONAL.

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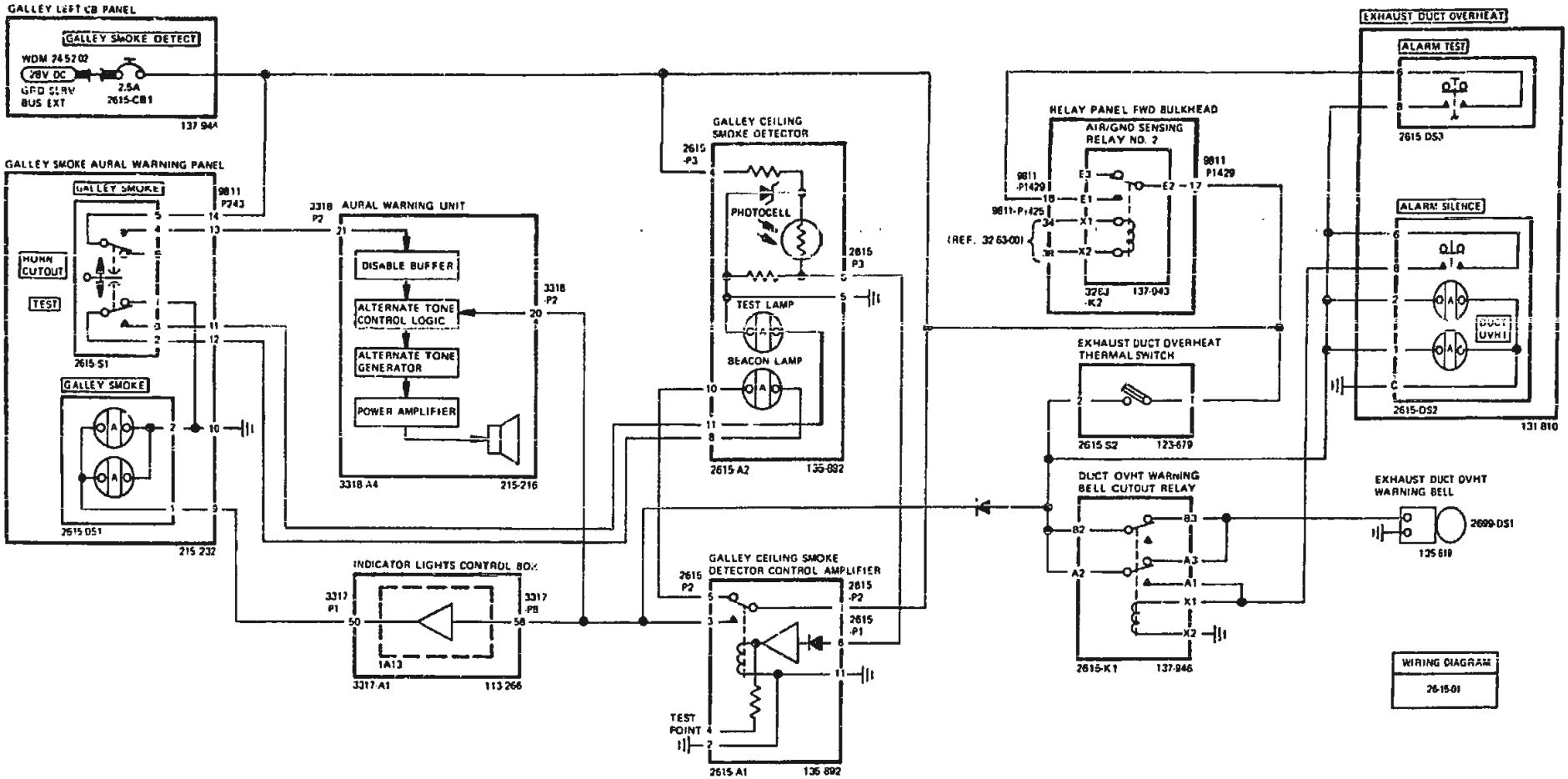
R
R

Oven Duct Overheat Checkout
Figure 104

EFFECTIVITY: ALL

001B



EM1-6002-26-058

R Smoke Detection and Duct Overheat Schematic
R SCHEM 1

R EFFECTIVITY: ALL
R
0018

R SMOKE AND OVERHEAT DETECTION SYSTEM - MAINTENANCE PRACTICES

R 1. General

R This procedure removes three-phase power from all lower galley
R ovens in order to dispatch an airplane with the Lower Galley
R Overheat Detection System inoperative.

R 2. Referenced Procedures

R 21-41-00 External Power/Ground Service System - Maintenance
R Practices

R 24-51-00 AC Bus System - Description and Operation

R 3. Lower Galley Oven Deactivation

R NOTE: This deactivation procedure applies only when an aircraft
R is to be dispatched in accordance with the MEL.

R Number of lower galley ovens installed can vary depending
R on operator's requirements. This procedure requires that
R all installed ovens be deactivated.

R A. On the Galley Right Circuit Breaker Panel, Zone 130, open
R and tag all OVEN circuit breakers. A maximum of six (6)
R OVEN circuit breakers can be installed on the panel.

R B. Install a placard on each oven in the lower galley, GALLEY
R OVERHEAT DETECTION SYSTEM INOPERATIVE - OVEN DEACTIVATED.

R C. Install a placard in the flight station on the FE/SO panel,
R GALLEY OVERHEAT DETECTION SYSTEM INOPERATIVE-ALL OVENS
R DEACTIVATED.

R D. Make appropriate entry in aircraft log book.

LOWER COMPARTMENT SMOKE AND OVERHEAT DETECTION SYSTEM ADJUSTMENT AND TEST

1. Referenced Procedure

R

10-10-00	Parking - Maintenance Practices
24-41-00	External Power/Ground Service System - Maintenance Practices
29-21-00	Ram Air Turbine System - Maintenance Practices

2. Equipment

Smoke generator CAT. NO. 300 Air Flow Indicator, manufactured by Environmental Science Div. 1400 Taylor Avenue, Baltimore, Maryland-21204 or equivalent.

3. Adjustment/Test

A. Galley Smoke Detection System Operational Test

(1) On pilots overhead circuit breaker panel (CB1), zone 210, verify that circuit breakers AURAL WARN - TEST AND RESET (L6), MULT SND (L8), and OVSP (L7) are closed.

On galley left circuit breaker panel, zone 131, verify that circuit breaker GALLEY SMOKE DETECT is closed.

(2) Turn on electrical power (Ref. 24-41-00).

(3) On Flight Engineer/Second Officers LIGHTS panel, zone 215 latch TEST switchlight to verify operation of Fire Detection Warning lights.

(4) Unlatch TEST switchlight on LIGHTS panel.

(5) Locate GALLEY SMOKE detection panel in FE/SO upper panel, and hold toggle switch in TEST position.

(6) Verify that GALLEY SMOKE light flashes on and off, and aural warning horn emits an alternating tone.

NOTE: Aural warning alternating tone will sound for approximately 10 seconds and automatically go off.

(7) Release smoke detection switch to off then verify that smoke light is off.

R (8) Momentarily place the GALLEY SMOKE switch in the HORN
R CUTOUT position to silence aural warning alternating tone.

(9) Turn off electrical power (Ref. 24-41-00).

B. Galley Oven Duct Overheat Warning System Operational Test

(1) Verify that circuit breakers are closed as listed in Step 2A(1).

(2) On pilots overhead circuit breaker panel CB1 zone 210, open and tag circuit breakers RAT MAIN DEPLOY-B14 and RAT AUTO DEPLOY-L3.

WARNING: INSTALL RAT GROUND SAFETY LOCK (REF. 29-21-00).

INSTALL LANDING GEAR DOWNLOCK SAFETY PINS (Ref. 10-10-00).

(3) On second officers overhead circuit breaker panel CB2 zone 215, open and tag MLG GND SENSE-L8 circuit breaker.

(4) Turn on electrical power (Ref. 24-41-00).

(5) On galley emergency power disconnect panel, zone 132, press and hold EXHAUST DUCT OVERHEAT ALARM TEST switch.

(6) In the galley, verify that DUCT OVHT light is off and galley duct fire bell does not ring.

(7) At Flight Engineer/Second Officers station, verify that GALLEY SMOKE light is off and aural warning unit does not sound.

(8) Close circuit breaker opened in Step 3B(3).

(9) On galley emergency power disconnect panel, zone 132, press and hold EXHAUST DUCT OVERHEAT - ALARM TEST switch.

(10) In the flight station, verify that GALLEY SMOKE detection light comes on steady and aural warning horn is activated.

(11) In the galley, verify that galley duct overheat alarm bell is activated and ALARM SILENCE switchlight on emergency galley power panel comes on.

(12) While holding ALARM TEST switch depressed, unlatch ALARM SILENCE switchlight.

(13) Verify that galley duct overheat alarm bell is silenced and ALARM SILENCE switchlight remains on.

(14) Release ALARM TEST switch.

(15) Verify that ALARM SILENCE switchlight goes off.

(16) In the flight station, verify that GALLEY SMOKE detection light is off.

R (17) Momentarily place the GALLEY SMOKE switch in the HORN
R CUTOUT position to silence aural warning horn.

R NOTE: After actuating HORN CUTOUT switch, a minimum of ten seconds elapsed time is required before initiating a new test to get the aural warning tone.

Aural warning alternating tone will sound for approximately 10 seconds and go off
R automatically without actuating the HORN CUTOUT
R switch.

(18) Turn off electrical power (Ref. 24-41-00).

(19) Remove RAT ground safety lock (Ref. 29-21-00).

(20) Remove landing gear down lock safety pins (Ref. 10-10-00)

C. Smoke Detector Operational Test

(1) Verify that circuit breakers are closed as listed in Step 2A(1).

(2) Turn on electrical power (Ref. 24-41-00) and verify that mid electrical service center exhaust fan is operating.

(3) Apply smoke, only for a second, to galley smoke detector air inlet tube opening located between galley lifts approximately midway between ceiling and floor.

(4) Verify GALLEY SMOKE detector light on FE/SO smoke detection panel flashes and aural warning horn emits an alternating tone.

R (5) Silence aural warning horn with horn cutout switch and verify that smoke detector light goes off when smoke has cleared detector.

(6) Turn off electrical power (Ref. 24-41-00).

GALLEY SMOKE DETECTOR - REMOVAL AND INSTALLATION

1. Referenced Procedure

26-15-00 Lower Compartment Smoke and Overheat Detection System - Adjustment and Test

2. Removal/Installation

A. Removal

(1) On galley left circuit breaker panel, zone 131, open and tag circuit breaker GALLEY SMOKE DETECT (22E)

(2) Open smoke detector access door in galley ceiling forward and left of lift, zone 135.

(3) Disconnect electrical connector and detach rubber tube connection from smoke detector (Ref. Fig. 401).

(4) While holding smoke detector, remove mounting screws and lower smoke detector.

B. Installation

(1) Verify that circuit breaker opened in Step 2A(1) is open and tagged.

(2) Hold smoke detector in mounting position and fasten with the mounting screws.

(3) Connect electrical connector to smoke detector.

(4) Install rubber tube connection to smoke detector.

(5) Test lamp in accordance with Paragraph 4.

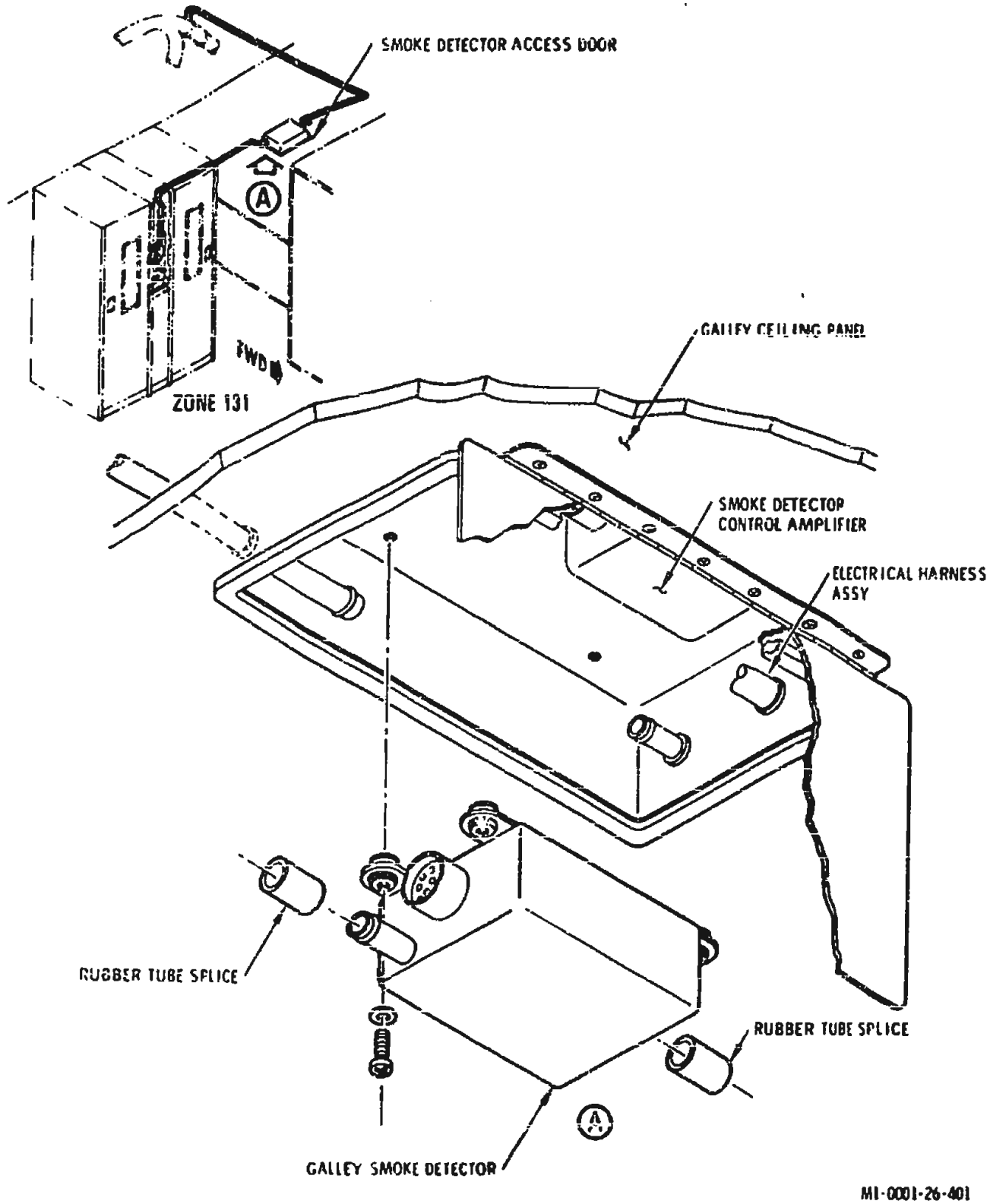
(6) Close and secure smoke detector access door.

(7) Test the galley smoke detector system (Ref. 26-15-00).

3. Relamping

A. Smoke Detector

(1) On galley left circuit breaker panel, zone 131, open and tag circuit breaker GALLEY SMOKE DETECT (22E).



R
R Galley Smoke Detector - Removal and Installation
Figure 401

(2) Open smoke detector access door in galley ceiling forward and left of lift, zone 135.

(3) Remove smoke detector cage assembly by turning two Dzus fasteners one-quarter turn and lifting cage assembly free (Ref. Fig. 402).

NOTE: When relamping beacon lamp, perform Step 3A(4). When relamping test lamp, perform Step 3A(5).

(4) Replace beacon lamp assembly as follows:

(a) Unscrew gland nut from labyrinth.

(b) Unscrew lampholder insert from lampholder.

(c) Remove lamp from lampholder insert.

(d) Insert replacement lamp in lampholder insert.

NOTE: Replacement lamps are retained in spring clips attached to base plate.

(e) Screw lampholder insert into lampholder.

(f) On SMOKE DETECTOR panel, set A-BOTH-B rotary selector switch to BOTH.

(g) On galley left circuit breaker panel, zone 131, close SMOKE DETECT A(22E) and B(19E) circuit breakers.

(h) Verify that beacon lamp is on.

(i) On galley left circuit breaker panel, zone 131, open SMOKE DETECT A(22E) and B(19E) circuit breakers.

(j) Screw gland nut onto labyrinth.

(5) Replace test lamp assembly as follows:

(a) Unscrew gland nut from labyrinth.

(b) Remove lamp from labyrinth.

(c) Insert replacement lamp in labyrinth.

(d) On SMOKE DETECTOR panel, set A-BOTH-B rotary selector switch to BOTH.

(e) On galley left circuit breaker panel, zone 131, close SMOKE DETECT A(22E) and B(19E) circuit breakers.

(f) On SMOKE DETECTOR panel, momentarily depress TEST button. Verify that test lamp comes on when TEST button is depressed.

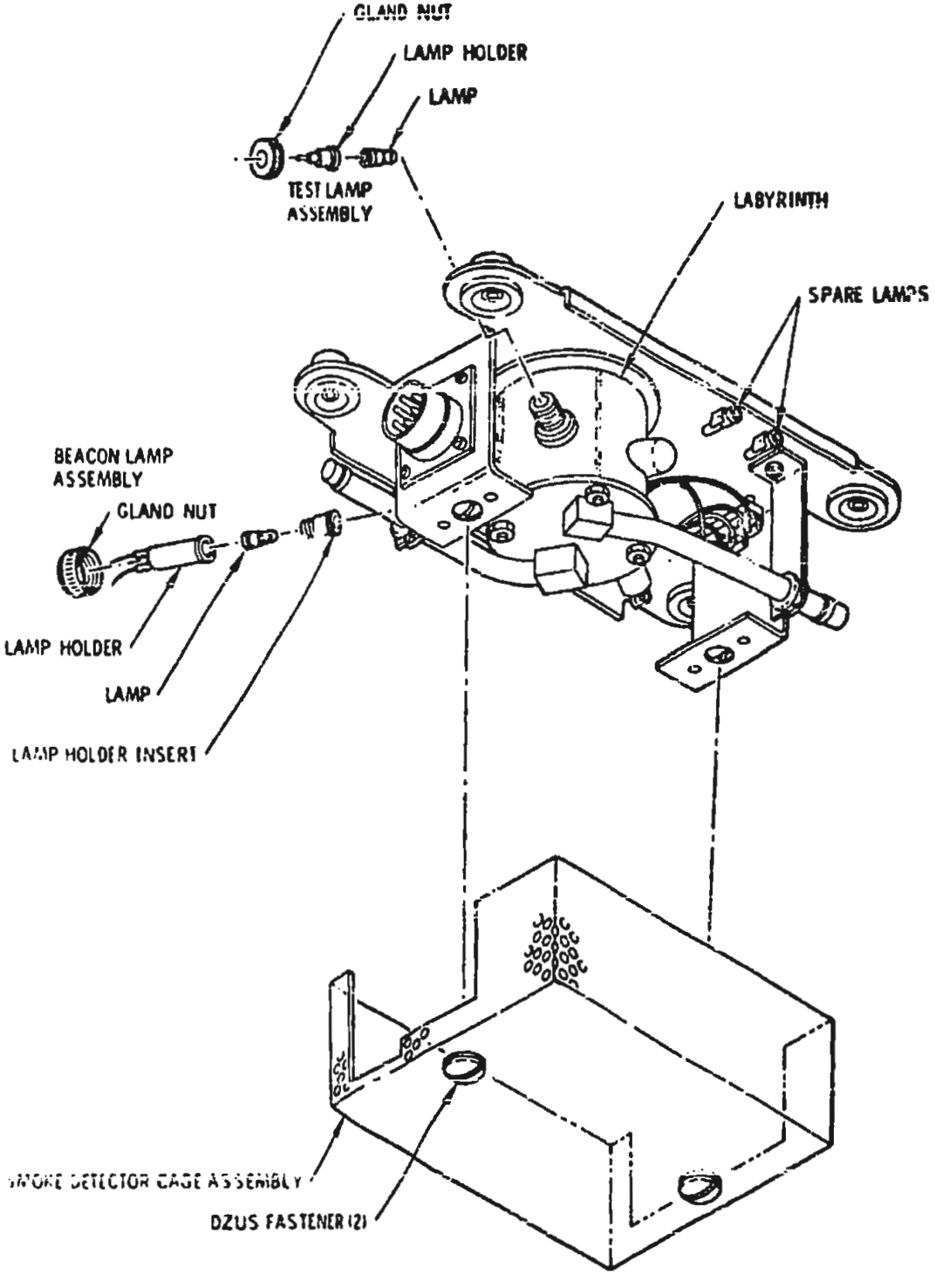
(g) On galley left circuit breaker panel, zone 131, open SMOKE DETECT A(22E) and B(19E) circuit breakers.

(h) Screw gland nut onto labyrinth.

(6) Install smoke detector cage assembly.

(7) Remove tag and close circuit breaker opened in Step3A(1).

(8) Test galley smoke detector system (Ref. 26-15-00).



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R
R

Lamp Replacement
Figure 402

GALLEY SMOKE DETECTOR - CLEANING AND PAINTING

1. General

The following procedures specify cleaning methods for the smoke detector inlet tube and inlet screen. These procedures may be performed independently or simultaneously.

2. Equipment and Materials

Rubber Tubing, SAE Spec AMS 3208, 0.06 in. wall thickness by 0.31 in. inside diameter by 4.00 in. long, or equivalent

Flexible wire, approximately 8 ft long

Soft cloth for swab

Solvent, Trichloroethylene, or equivalent

3. Referenced Procedure

25-32-00 Galley Lift System

4. Cleaning/Painting

A. Smoke Detector Inlet Tube

(1) Operate lift to full up position (Ref. 25-32-00).

(2) On galley left circuit breaker panel, zone 131, open and tag circuit breaker LIFT - LEFT.

(3) Open lift enclosure door in galley compartment by operating coin-slot latch above door knob.

R WARNING: MECHANICAL STOPS MUST BE EXTENDED WHEN PERFORMING MAINTENANCE UNDER LIFT WITH LIFT IN UP POSITION.

(4) Extend mechanical stops, located in lift guide rail, approximately 75 inches above galley floor.

(5) Disconnect tube from fitting on aft side of one-half inch screened opening below interphone handset, by splitting and removing rubber splice.

(6) Open galley smoke detector access door in ceiling above galley sink.

(7) Disconnect tube from inlet fitting on smoke detector by splitting and removing rubber splice.

(8) Thread flexible wire through tube from detector end.

(9) Attach swab to end of wire.

R WARNING: USE SOLVENT IN VENTILATED AREA. DO NOT BREATH SOLVENT FUMES.

(10) Saturate swab with solvent.

(11) Pull wire and swab through tube.

(12) Connect tube using 2.00 (±0.03)-inch length of rubber tube at each end.

(13) Stow lift mechanical stops.

(14) Close lift door.

(15) Remove tag and close circuit breaker opened in Step 4A(2).

B. Smoke Detector Inlet Screen

(1) Use vacuum cleaner to clean screen on one-half inch opening below interphone handset.

NOTE: A stiff bristled brush may be used to loosen any dust that can not be removed by vacuum.

SMOKE DETECTOR CONTROL AMPLIFIER - REMOVAL AND INSTALLATION

1. Referenced Procedure

26-15-00 Lower Compartment Smoke and Overheat Detection System - Adjustment and Test

2. Removal/Installation

A. Removal

(1) On galley left circuit breaker panel, zone 130, open and tag circuit breaker GALLEY SMOKE DETECT.

(2) Open smoke detector access door in galley ceiling forward and left of lift on aircraft centerline, zone 135.

(3) Disconnect electrical connectors from smoke detector amplifier (Ref. Fig. 401).

R (4) While holding smoke detector control amplifier, remove mounting screws, then lower amplifier from ceiling.

B. Installation

(1) Verify circuit breaker opened in Step 2A(1) is open and tagged.

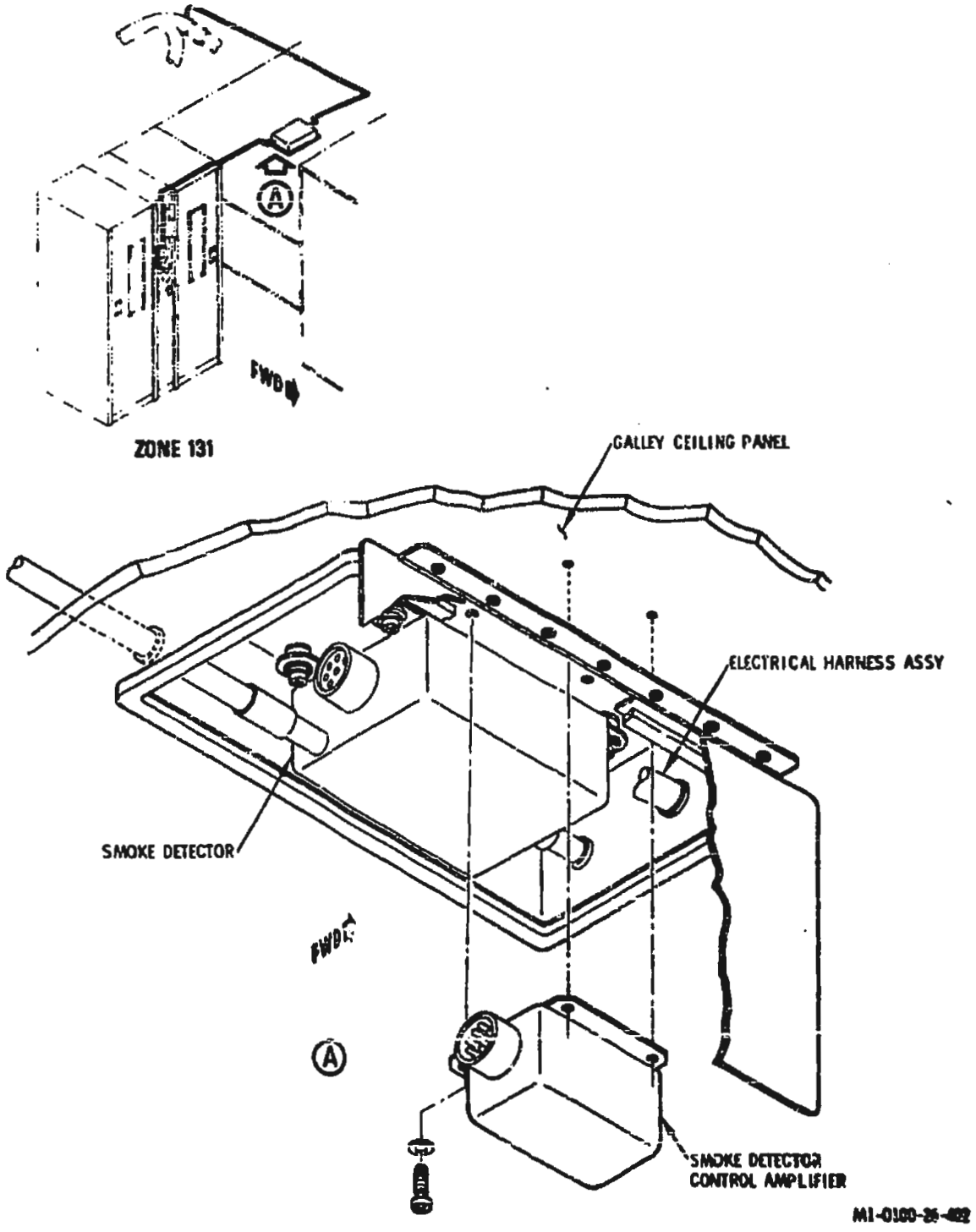
(2) Hold smoke detector control amplifier in mounting position and fasten with mounting screws.

(3) Connect electrical connectors to smoke detector control amplifier.

(4) Close and secure smoke detector access door.

(5) Remove tag and close circuit breaker opened in Step 2A(1).

(6) Test the galley smoke detection system (Ref. 26-15-00).



R Smoke Detector Control Amplifier - Removal and Installation
R Figure 401

EXHAUST DUCT OVERHEAT THERMAL SWITCH - REMOVAL AND INSTALLATION

1. Referenced Procedures

   25-51-06 Forward Cargo Compartment Liner Panels - Removal and Installation

   26-15-00 Galley Smoke and Overheat Detection Systems - Adjustment and Test

2. Removal/Installation

   A. Removal

      (1) On galley left circuit breaker panel, zone 130, open and tag circuit breaker GALLEY SMOKE DETECT.

      (2) In forward cargo compartment (Ref. Fig. 401), remove
R left aft panel 123KL (Ref. 25-51-06).

      (3) Disconnect and tag electrical leads at top of thermal switch.

      (4) Remove mounting screws and lift thermal switch off duct.

   B. Installation

      (1) Verify that circuit breaker opened in Step 2A(1) is open and tagged.

      (2) Verify that duct flange is clean.

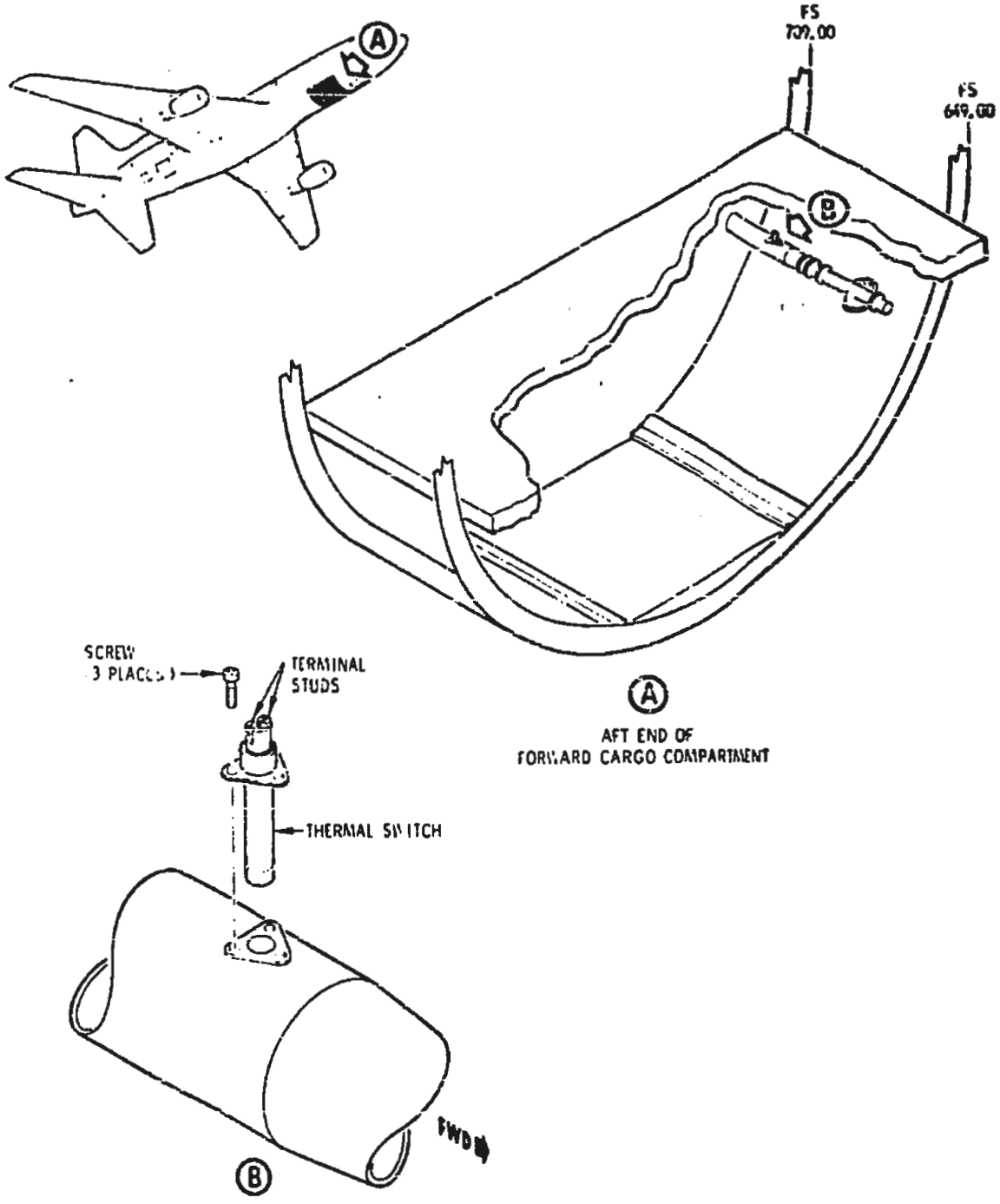
      (3) Insert thermal switch into duct opening and fasten with mounting screws.

      (4) Remove tags and connect electrical leads to terminal studs on thermal switch. Do not tighten stud nuts to more than 25 lb in.

R   (5) Install panel 123KL (Ref. 25-51-06).

      (6) Remove tag and close circuit breaker opened in Step 2A(1).

      (7) Test galley smoke and overheat detection system (Ref. 26-15-00).



R R Exhaust Duct Overheat Thermal Switch - Removal and Installation
Figure 401

R R 050B EFFECTIVITY: ALL

EXHAUST DUCT OVERHEAT THERMAL SWITCH - ADJUSTMENT AND TEST

1. General

The exhaust duct overheat detector is a sealed bimetal heat-sensitive switch. The switch must be removed from the aircraft to be bench checked.

2. Referenced Procedures

26-15-00 Lower Compartment Smoke and Overheat Detection System - Adjustment and Test

26-15-06 Exhaust Duct Overheat Thermal Switch - Removal and Installation

3. Adjustment/Test

A. Remove exhaust duct overheat thermal switch from aircraft (Ref. 26-15-06).

NOTE: Thermal switch trips and activates fire detection system at 500 (±15) degrees F. Switch resets automatically after cooling 10 degrees F.

B. Bench check operation of thermal switch, operational tolerances are 500 (±15) degrees F.

C. Reinstall thermal switch in aircraft (Ref. 26-15-06).

D. Perform Smoke and Overheat Detection System - Adjustment and Test procedure (Ref. 26-15-00).

R EXHAUST DUCT OVERHEAT WARNING BELL - REMOVAL AND INSTALLATION

R 1. Referenced Procedure

R 26-15-00 Galley Smoke and Overheat Detection System - Adjustment and Test

R 2. Removal/Installation

R A. Removal

R (1) On galley left circuit breaker panel, zone 130, open and tag circuit breaker GALLEY SMOKE DETECT.

R (2) On galley ceiling panel, remove cover from warning bell.

R (3) Support bell while removing screws, holding bell to support.

R (4) Lower bell to expose electrical terminals.

R (5) Remove electrical wires from terminals and remove bell.

R B. Installation

R (1) Verify that circuit breaker opened in Step 2A(1) is opened and tagged.

R (2) Connect electrical wires to bell terminals.

R (3) Insert bell through opening in ceiling, and fasten to support.

R (4) Install cover over opening.

R (5) Remove tag and close circuit breaker opened in Step 2A(1).

R (6) Verify operation of Galley Oven Duct Overheat Warning System (Ref. 26-15-00).

CR CR

LAVATORY SMOKE DETECTION SYSTEM
DESCRIPTION AND OPERATION

CR CR NOTE: The Lavatory Smoke Detection Procedures are contained in MM 26-19-00 in accordance with TWA CIC 473-548ML-005

C

LAVATORY SMOKE DETECTION - DESCRIPTION AND OPERATION

C 1. General

C Lavatory smoke detection is provided by a surface mounted Gentex
C Model 824 PTYX smoke detector installed in each lavatory. The
C detector operates on 28V dc, containing no batteries, and uses
CR the photoelectric principle of detection. There may be a 135
C degree Fahrenheit thermal sensor protruding through the unit
C cover. Mounting is accomplished by a twisting action onto a
C fixed mounting plate and additional security is provided by two
C screws installed through the unit. Testing is accomplished by
C rotating the integral test knob/button plug on front of detector
C in a CCW direction. The alarm will continue until the test knob
C is returned to its normal position. An actual alarm continues
C until the smoke clears or power is removed from the unit. An
C integral horn pulses at two second intervals when the detector
C alarms. In addition, the cabin call chime, individual lavatory
C call light and flight attendant lavatory call lights operate at
C the same two second intervals for an alarm condition. An alarm
C can be silenced by operating a miniature bat handle ON-OFF
C switch, on the side of the unit, to OFF position. With the
C switch in OFF position, the individual lavatory call light and
C flight attendant lavatory call lights will illuminate steady
C state. The cabin call chime does not sound for this condition.
C Connection to airplane electrical circuits is through a rear
C mounted receptacle. A red LED pilot light on the face of the
C unit blinks every 16-20 seconds, indicating electrical power is
C being supplied. For an alarm condition, this LED will be
C illuminated continuously.

CR

LAVATORY SMOKE DETECTION - DESCRIPTION AND OPERATION

CR 1. General

CR A. Lavatory smoke detection is provided by a surface mounted Gentex Model 8240 PY smoke detector installed in each lavatory. The detector operates on 28V dc, containing no batteries, and uses the photoelectric principle of detection. Mounting is accomplished by a CW twisting action onto a fixed mounting plate.

CR B. Testing is accomplished by rotating the integral test knob on front of detector. When the knob is rotated to the CCW stop, the alarm should sound in less than six seconds. The alarm will continue until the test knob is returned to its normal position. An actual alarm continues until the smoke clears or power is removed from the unit. An integral horn sounds continuously when the detector alarms and the cabin chime will sound at the beginning of the alarm. In addition, the individual lavatory call light and flight attendant lavatory call lights operate steady state for an alarm condition and must be reset following an alarm. When the knob is rotated to the clockwise stop, a sensitivity check is performed and the alarm should not activate. If it does, try to correct by blowing dust from the detector (Ref. 26-19-00 Page 201). Always return the test knob to normal position after testing.

CR C. An alarm produced by a malfunctioning smoke detector can be silenced by removing and unplugging the detector.

CR D. Connection to airplane electrical circuits is through a rear mounted receptacle. A red LED pilot light on the face of the unit blinks every 16-20 seconds, indicating electrical power is being supplied. For an alarm condition, this LED will be illuminated continuously.

CR

LAVATORY SMOKE DETECTOR - MAINTENANCE PRACTICES

C 1. General

C A. Gentex lavatory smoke detectors operate on the photoelectric
C principle of detection using smoke, vapor, dust, etc. to
C reflect light from an internal source into a sensor.
C Therefore, elimination of dust accumulation is essential to
C reliable operation.

C 2. Equipment

C A. A source of compressed dry nitrogen at 25-30 psi.
CR Nitrogen Bottle, Regulator and Hose
CR TWA Tool & Equipment No. 26-10-00-0010

C 3. Dust Removal

C A. With smoke detector installed, use a compressed dry nitrogen
C source to blow out dust accumulation. The compressed air
C flow should be directed through the unit from various angles
C in succession until all visible dust is removed.

C 4. Perform Lavatory Smoke Detection - Adjustment/Test 26-19-00,
CR Page 501, CONFIG-1 or CONFIG-2.

C LAVATORY SMOKE DETECTION - REMOVAL AND INSTALLATION

C 1. Removal/Installation

C A. Removal

C (1) On P8 FE/SO OVHD CB PNL 2, open and tag the applicable
C circuit breaker.

C (a) PASS SVCE HOST ADVSY IND (C8) - Apls 001 thru 031

C (b) GND SVCE CALL SYSTEM (D9) - Apls 032 thru 036

C (2) Remove and retain the two security screws installed
C through smoke detector.

C (3) Grasp and twist detector CCW to loosen it from its
C base. Slowly pull detector away from base far enough
C to grasp and disconnect electrical plug.

C B. Installation

C (1) Verify circuit breaker opened in Step 1A(1) is open and
C tagged.

C (2) Hold smoke detector and connect plug to rear
C receptacle.

C (3) Orient detector so that security screw holes will align
C with fasteners, mesh detector with base and twist CW
C until locked. Install security screws.

C NOTE: Do not over tighten security screws.

C (4) Place smoke detector power switch to ON. Remove tag
C and close circuit breaker opened in Step 1A(1).

CR (5) Perform self test of lavatory smoke detector per page
CR 501, CONFIG-1.

CR

LAVATORY SMOKE DETECTION - REMOVAL AND INSTALLATION

CR 1. Removal/Installation

CR A. Removal

CR (1) On P8 FE/SO OVHD CB PNL 2, open and tag the applicable
CR circuit breaker.

CR (a) PASS SVCE HOST ADVSY IND (C8) - Apls 001 thru 031

CR (b) GND SVCE CALL SYSTEM (D9) - Apls 032 thru 036

CR (2) Grasp and twist detector CCW to loosen it from its
CR base. Slowly pull detector away from base far enough
CR to grasp and disconnect electrical plug.

CR B. Installation

CR (1) Verify circuit breaker opened in Step 1A(1) is open and
CR tagged.

CR (2) Hold smoke detector and connect plug to rear
CR receptacle.

CR (3) Mesh detector with base and twist CW until locked.

CR (4) Remove tag and close circuit breaker opened in Step
CR 1A(1).

CR (5) Perform self test of lavatory smoke detector per page
CR 501, CONFIG-2.

C

LAVATORY SMOKE DETECTION - ADJUSTMENT AND TEST

C 1. General

C A. The operational test provides a fast checkout of system performance. The test knob is not an electrical switch, nor is it connected in any way to the alarm output. Instead, the test knob actually tests the sensitivity of the unit by using the same principle involved as when smoke enters the detector. When test position (CCW position) is selected, you are scattering the detector's LED light to the equivalent of 2% actual smoke. Therefore, when performing the self test, you are actually simulating the smoke condition in the detector and testing all elements of the smoke detector that are necessary for detection of actual smoke.

C 2. Equipment

C No test equipment is required to operationally test a smoke detector.

C 3. Adjustment/Test

C A. Lavatory Smoke Detection System Operational Test.

C (1) On P8 FE/SO OVHD CB PNL 2 verify that the following circuit breaker is closed.

C (a) PASS SVCE HOST ADVSY IND (C8) - Apls 001 thru 031.

C (b) GND SVCE CALL SYSTEM (D9) - Apls 032 thru 036.

C (2) Provide electrical power (Ref. 24-41-00).

C (3) Place smoke detector power switch to OFF position. Check that the individual lavatory and flight attendant lavatory call lights are illuminated steady and no aural warning is heard.

C (4) Place smoke detector power switch to ON and note that lavatory call lights extinguish.

C (5) The slotted button plug on front of detector covers the test knob. Turn button plug/test knob to the test (CCW) position. The smoke detector internal horn, flight attendant call chime, individual lavatory and

C flight attendant lavatory call lights operate at
C approximately two second intervals.

C (6) Return button plug/test knob to its normal operating
C position and all alarm functions cease.

C (7) Remove electrical power if no longer required (Ref.
C 24-41-00).

CR

LAVATORY SMOKE DETECTION - ADJUSTMENT AND TEST

CR 1. General

CR A. The operational test provides a fast checkout of system performance. The test knob is not an electrical switch, nor is it connected in any way to the alarm output. Instead, the test knob actually tests the operation/sensitivity of the detector by using the same principle involved as when smoke enters the detector. When the CCW test position is selected, the detector's LED light is scattered to the equivalent of 2% actual smoke. Therefore, when this test is performed, it actually simulates a smoke condition in the detector necessary to produce an alarm, thus testing all elements of the detector necessary for detection of smoke at the density for which the detector sensitivity is set. When the CW test position is selected, a lower level of light scattering is produced and an alarm should not occur. This test determines if the detector has become overly sensitive, possibly due to accumulation of dust.

CR 2. Equipment

CR No test equipment is required to operationally test a smoke detector.

CR 3. Adjustment/Test

CR A. Lavatory Smoke Detection System Operational Test.

CR (1) On P8 FE/SO OVHD CB PNL 2, verify that the following circuit breaker is closed.

CR (a) PASS SVCE HOST ADVSY IND (C8) - Apls 001 thru 031.

CR (b) GND SVCE CALL SYSTEM (D9) - Apls 032 thru 036.

CR (2) Provide electrical power (Ref. 24-41-00).

CR (3) Turn the test knob to the CCW stop. An alarm should sound in less than six seconds. An integral horn sounds continuously and the cabin chime will sound at the beginning of the alarm. The individual lavatory and flight attendant call lights illuminate steady.

CR (4) Return the test knob to its normal operating position and verify all alarm functions cease.

CR (5) Turn the test knob to the CW stop. The alarm should
CR not activate. Return the test knob to its normal
CR operating position.

CR NOTE: If Step (5) fails, try blowing dust from the
CR detector (Ref. 26-19-00 Page 201). (6) Remove
CR electrical power if no longer required (Ref.
CR 24-41-00).

EXTINGUISHING - DESCRIPTION AND OPERATION

1. General

Fire extinguishing is provided by three fixed fire extinguishing systems and nine portable fire extinguishers.

The fixed systems are provided to extinguish fires in the engine compartments and the APU compartment. The fixed systems consist of fire extinguisher containers, deployment lines and discharge nozzles, fire extinguisher discharged indicator lights, and discharge controls and circuitry. The hand-operated portable fire extinguishers are provided for fires in local or accessible areas.

R On aircraft with SB093-25-493
R additional fixed fire extinguishing systems are provided to
R extinguish fires in the cargo compartment and the lavatory waste
R receptacles.

ENGINE/APU FIRE EXTINGUISHING SYSTEM - DESCRIPTION AND OPERATION

1. General

Three separate and independent engine/APU fire extinguishing systems are provided for the aircraft. A system is provided for each wing engine (engines No. 1 and No. 3), and one system is provided for the fuselage-mounted engine (engine No. 2) and the auxiliary power unit (APU) (Ref. Fig. 1, 2, and 3).

Each system has two fire extinguisher containers, a main and an alternate, with controls and indicators to provide area isolation and extinguisher agent discharge. Engine No. 2 and the APU share the same two containers.

Containers for engine No. 1 (224 cubic inch) are located in the engine inlet cowling on the left side of the engine, zone 411.
R Containers for engine No. 3(224 cubic inch) are located in the engine inlet cowling on the left side of the engine, zone 421. Containers for engine No. 2 and the APU (630 cubic inch) are located in the right side of the afterbody forward lower section in front of the APU compartment, zone 317.

No. 1 and No. 3 engine container pressure gages can be seen through a window in the container access covers.

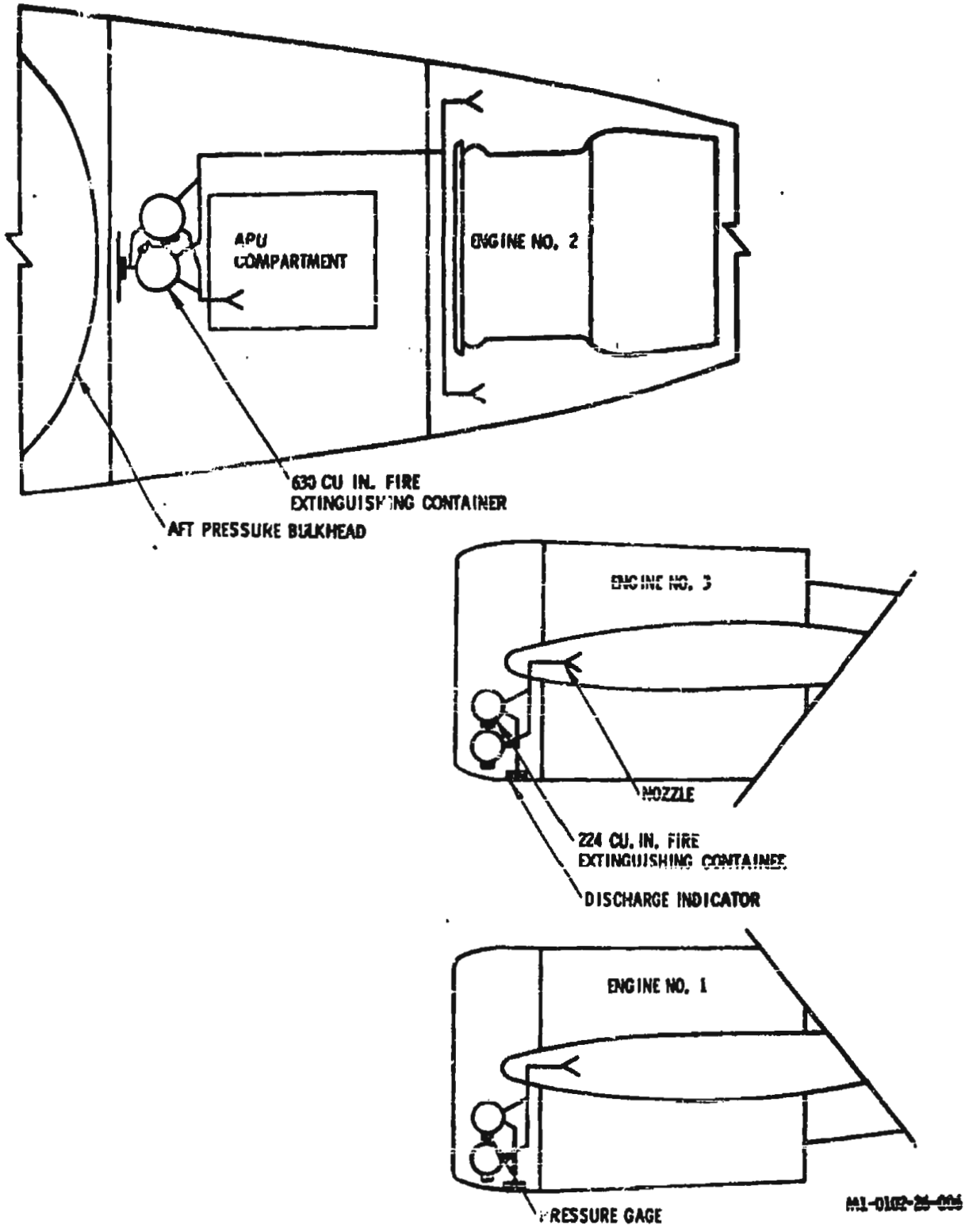
Thermal discharge/fill fittings on each container are tee'd to a common tube connected to a red thermal discharge indicator in
R the nose cowl surface. In the event of excessive container
R pressure a blow-out dksc in the fill fitting cap will rupture
R and discharge container pressure overboard.

The thermal discharge indicator for the engine No. 2 and APU containers is located in the afterbody lower surface.

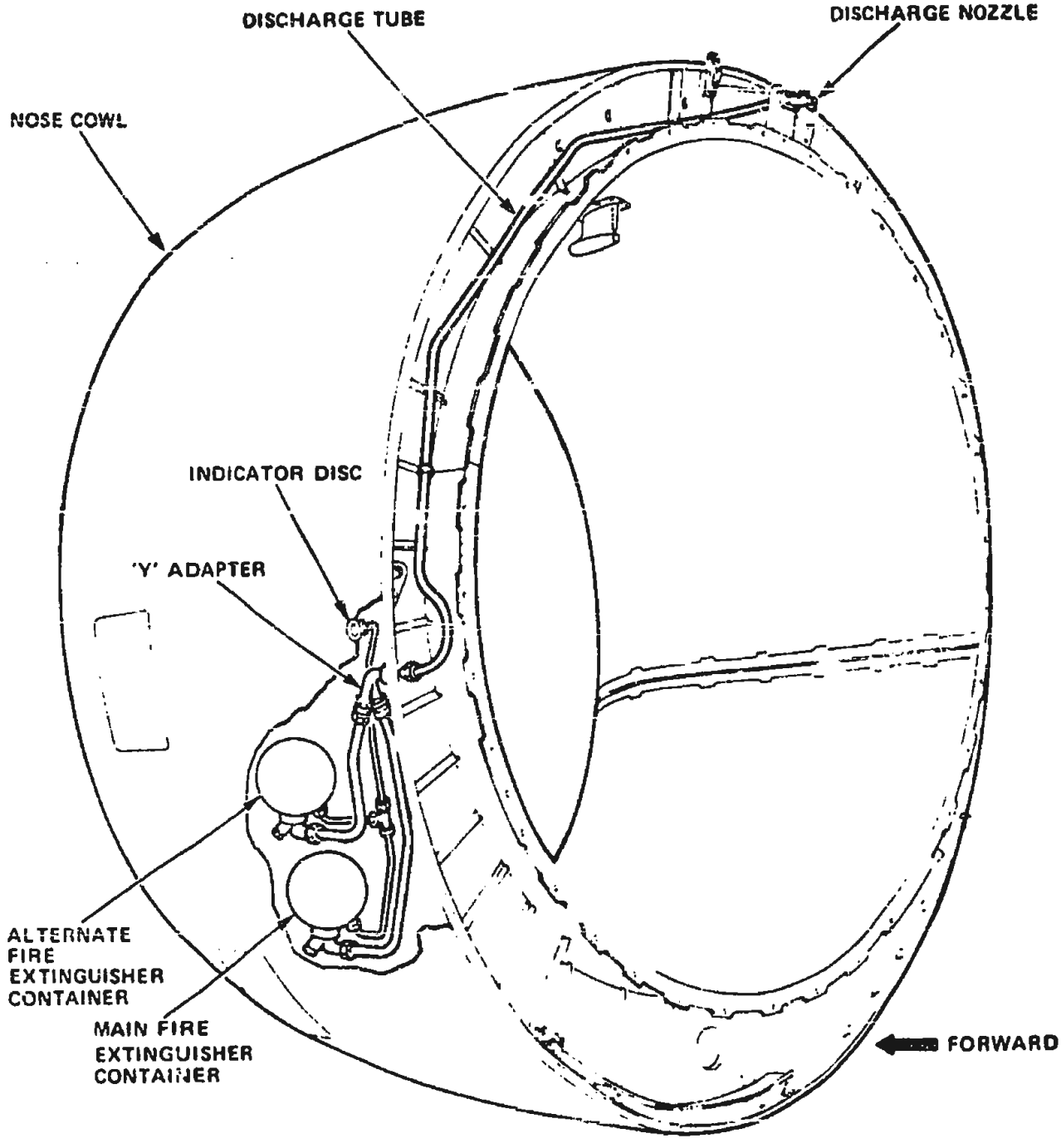
In operation, excessive container pressure will rupture the frangible disc, blow out the red indicator disc, and discharge the extinguisher contents overboard.

The containers can be discharged sequentially to their respective compartments. Three identical engine fire extinguishing control panels are provided on the pilots overhead panel, zone 210. Each panel contains a fire extinguisher discharge switch, a MAIN DISCH indicator light, an ALTN DISCH indicator light, and a fire emergency engine shutoff control (Ref. 26-11-00).

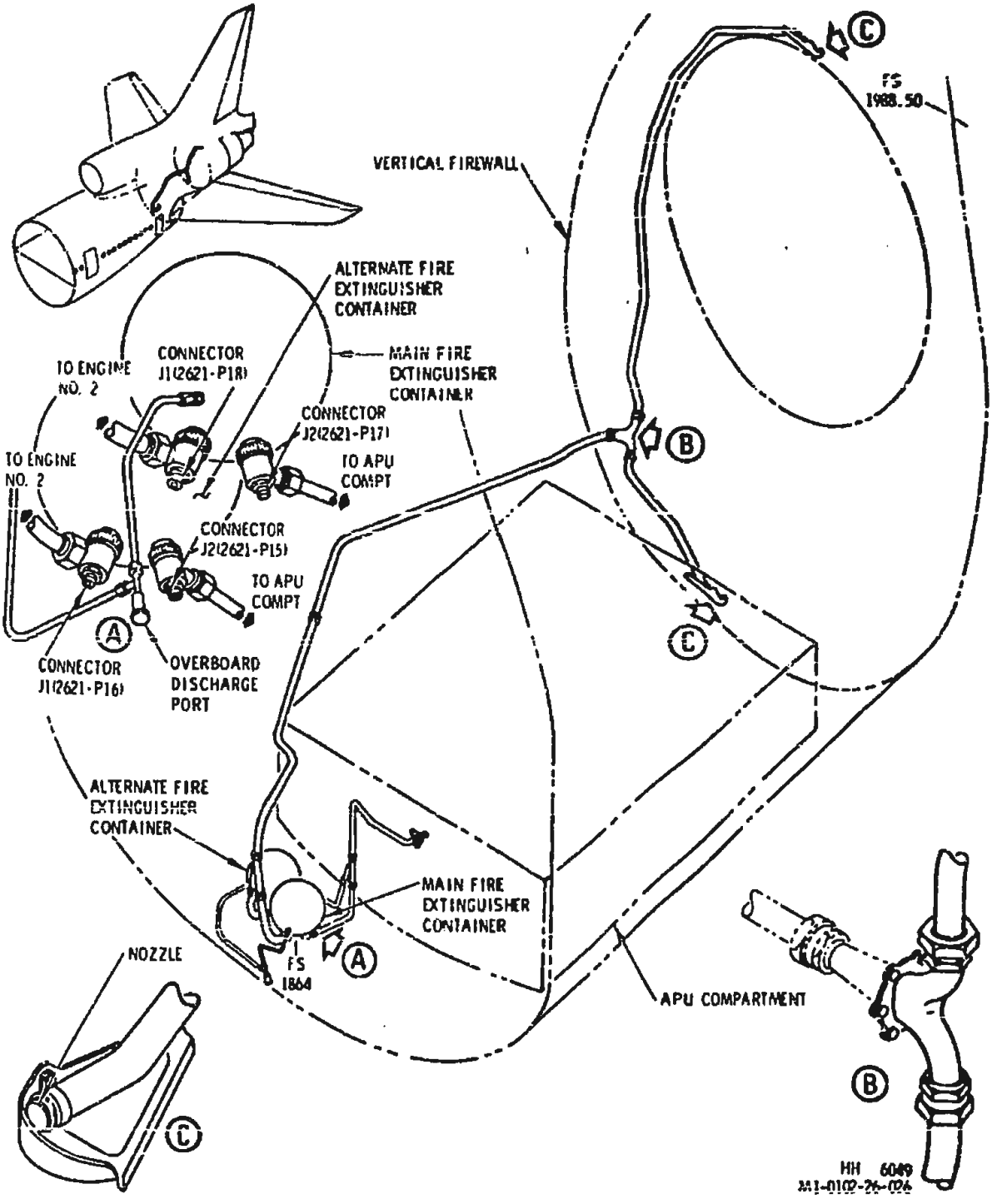
An APU fire extinguishing control panel is provided on the Flight Engineer/Second Officers upper panel, zone 215. The panel is identical to the three engine fire extinguishing



R
R Engine/APU Fire Extinguishing System
Figure 1



R No. 1 and No. 3 Engine Fire Extinguishing System
R Figure 2



R No. 2 Engine/APU Fire Extinguishing System
R Figure 3

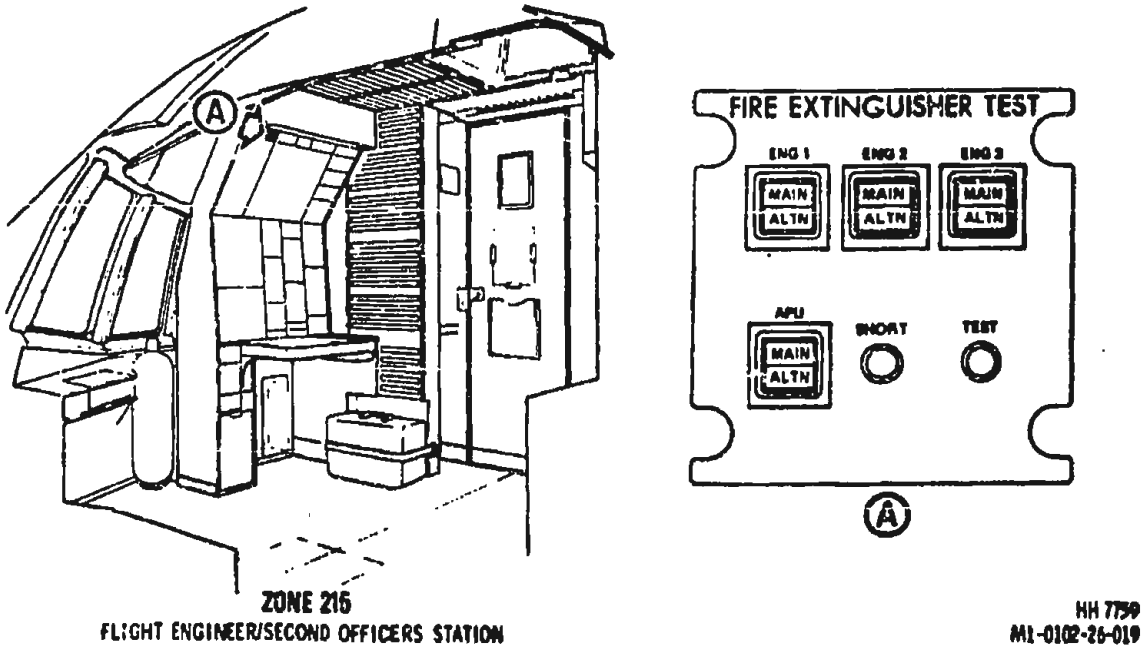
control panels (Ref. 26-11-00). The MAIN DISCH and ALTN DISCH indicator lights are wired in parallel to the indicator lights on engine No. 2 fire extinguishing control panel.

An APU external control panel is provided on the bottom centerline of the fuselage, zone 142. The MAIN DISCH and ALTN DISCH indicator lights are wired in parallel to the indicator lights on engine No. 2 fire extinguishing control panel. An automatic APU fire shutdown mode is provided. This mode is always selected when the aircraft is on the ground and may be selected when the aircraft is airborne (Ref. 49-61-00). An automatic APU extinguishing relay, located in the mid electrical service center, zone 137, provides the means to discharge the APU main extinguisher container automatically.

The engine/APU fire extinguisher test panel is located on the Flight Engineer/Second Officers upper panel. The test panel has two pushbutton switches for system test and four indicator lights (Ref. Fig. 4).

2. Operation

Manual operation of all flight station engine/APU fire extinguishing controls is identical. Engine/APU fire extinguishing is performed after a fire is detected and the



Engine/APU Fire Extinguisher Test Panel
Figure 4

affected fire emergency shutoff control handle has been pulled to expose the engine/APU fire extinguisher discharge switch (Ref. Fig. 5).

Operation of the discharge switch to the momentary left or right position applies 28V dc to the initiator cartridge of the selected engine/APU fire extinguisher container. This fires the squib causing total discharge of the fire extinguisher agent. The MAIN DISCH or ALTN DISCH indicator light, as applicable, will come on when the container pressure reduces to a predetermined value. The indicators remain on until the containers are replaced.

During the APU automatic fire shutdown mode of operation after the APU has shutdown and after the compartment ventilation system has closed (Ref. 49-61-00), 28V dc is applied to the coil of the automatic APU extinguishing relay. The energized relay applies 28V dc to the initiator cartridge of the APU main extinguisher container and the container discharges into the APU compartment.

Pulling the APU remote control handle down and twisting it toward either MAIN or ALTN causes the respective container to discharge. The MAIN DISCH or ALTN DISCH indicator light on the panel and in the flight station comes on when the container has discharged.

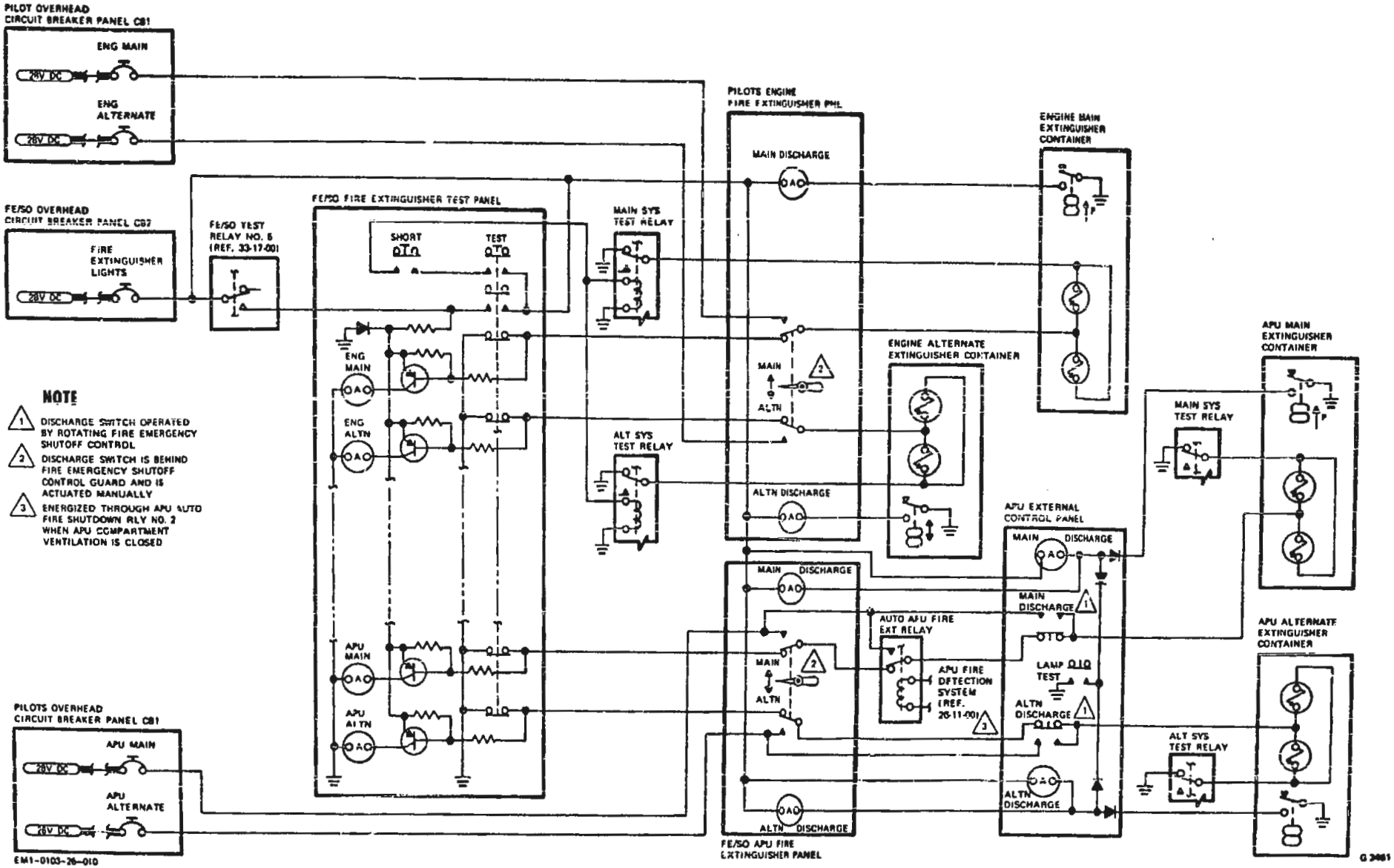
Depressing the TEST pushbutton switch on the FIRE EXTINGUISHER TEST panel connects test circuits to all the initiator cartridges in the containers simultaneously. Continuity of the initiators and wiring is verified by illumination of the respective MAIN and ALTN indicators. Depress the SHORT and TEST switches at the same time to check the initiator circuits for a short circuit. If there is no short, all the indicator lights will go out. A short is indicated in a particular circuit when the indicator for that circuit remains on.

3. Extinguisher Container (224-cubic-inch)

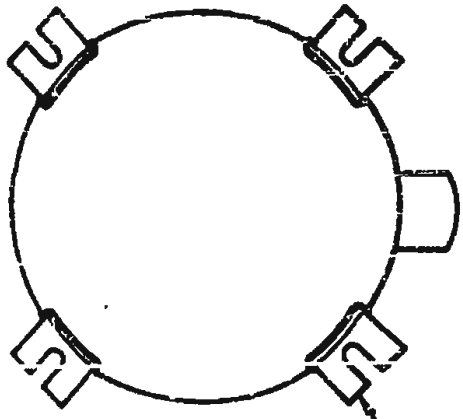
A. Description and Operation

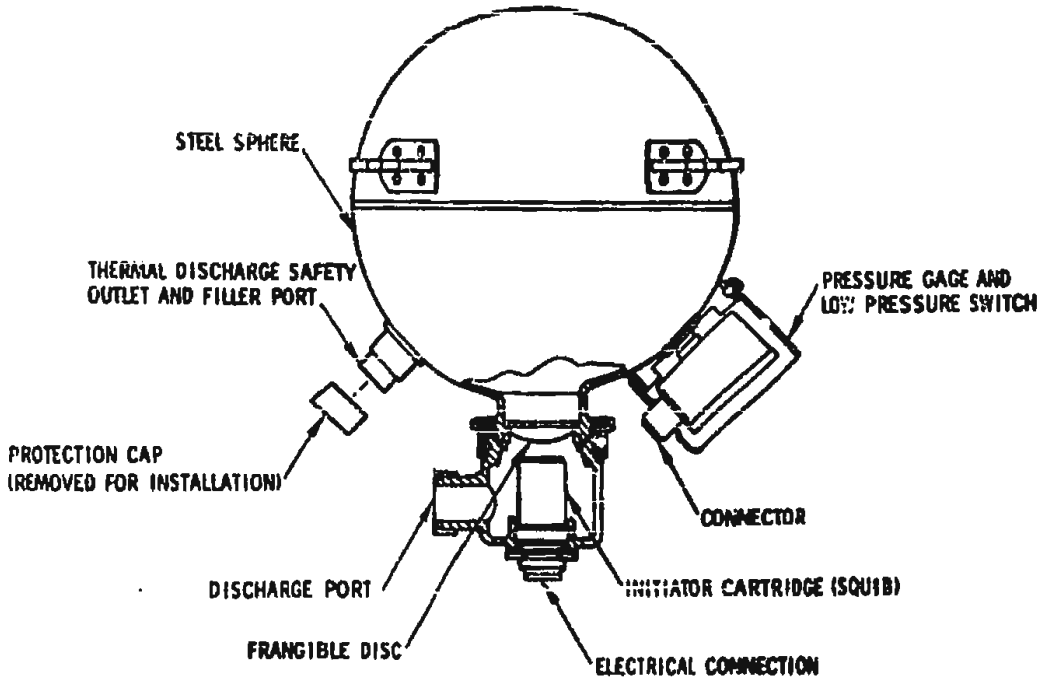
The extinguisher container (Ref. Fig. 6) is charged with 4.3 pounds of bromotrifluoromethane and supercharged with nitrogen to an operating pressure of 600 to 625 psig at 70 degrees F.

The two fire extinguisher containers of engines No. 1 and No. 3 are connected by rigid tubes, through a Y-adapter, to a common tube that leads to a single triple-outlet discharge nozzle. The extinguishers are located in zones 411 and 421. The discharge tube passes through the nose cowl rear



R Engine/APU Fire Extinguishing Simplified Schematic
R Figure 5





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mil-0102-26-003

R 224 Cubic-inch Extinguisher Container
R Figure 6

diaphragm to the nozzle that is mounted on a plate attached to the cowl mounting flange at the top center position. The nozzle outlets are directed over the LP compressor case.

The common discharge tube is clipped to the rear face of the nose cowl rear diaphragm.

Further rigid tubes connect from the thermal discharge safety outlet of each container, through a three-way adapter, to an indicator disc mounted on the nose cowl.

The thermal discharge safety outlet incorporates a frangible disc-type diaphragm to release excessive container pressure. The frangible disc ruptures at a pressure between 1520 to 1700 psig at 205 degrees F. The chart in Figure 7 shows the pressure/temperature relationship.

The hermetically sealed low-pressure switch closes at a pressure below 225 psig and opens at a pressure above 275 psig.

The discharge valve contains a dual, electrically initiated, cartridge-type, explosive squib. Application of 28V dc to the initiator cartridge causes direct explosive impingement on a stressed diaphragm which results in full flow of the extinguisher agent through the discharge valve.

4. Extinguisher Container (630-cubic-inch)

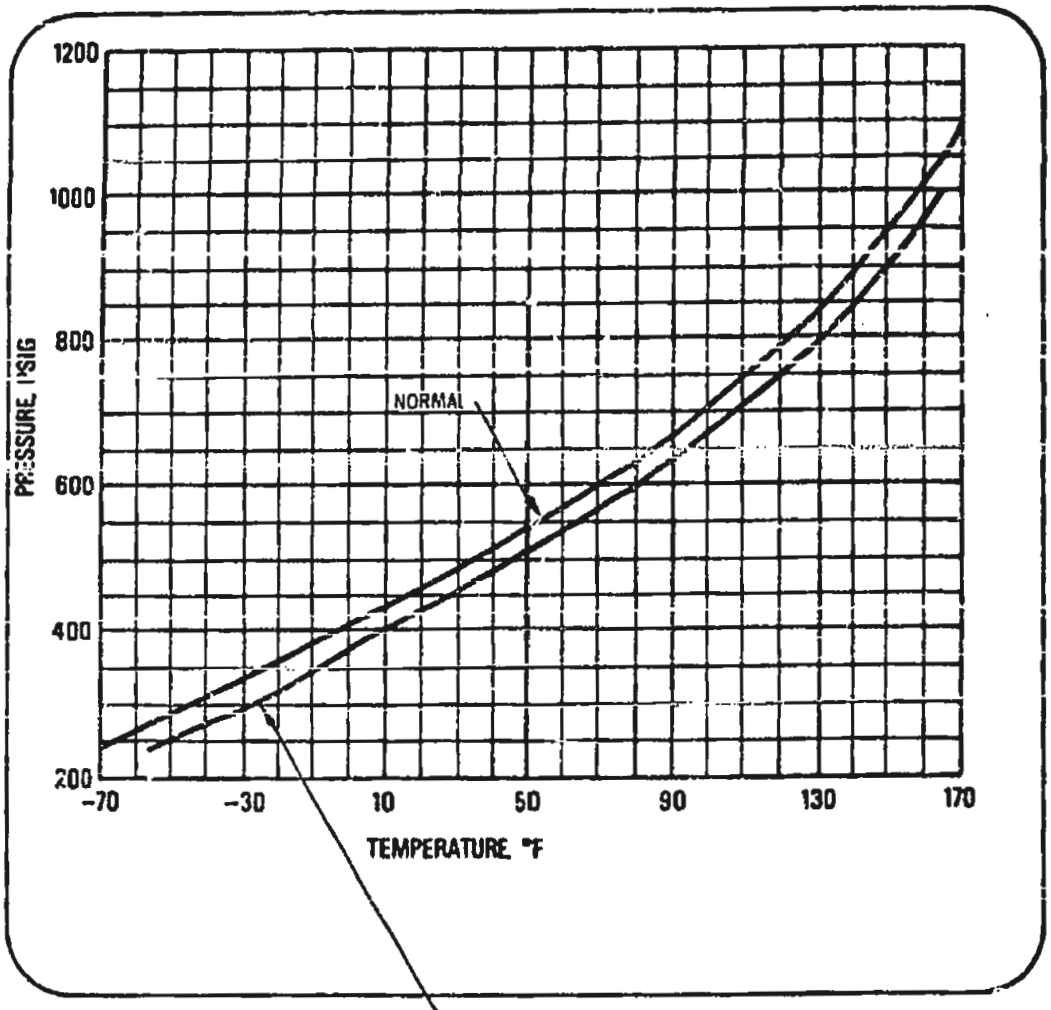
A. Description and Operation

The extinguisher container (Ref. Fig. 8) is charged with 15.1 pounds of bromotrifluoromethane and supercharged with nitrogen to an operating pressure of 600 to 625 psig at 70 degrees F.

The thermal discharge safety outlet incorporates a frangible disc-type diaphragm to release excessive container pressure. The frangible disc ruptures at a pressure between 1520 and 1700 psig at 205 degrees F. The chart in Figure 7 shows the pressure/temperature relationship.

The hermitically sealed low-pressure switch closes at a pressure below 225 psig and opens at a pressure above 275 psig.

Each discharge valve contains a cartridge with an integral dual, electrically initiated, explosive squib. Application of 28V dc to either initiator cartridge causes direct explosive impingement on a stressed diaphragm which results



ALLOWABLE MIN. PRESS	
°F	PSI
160°	965
140°	865
120°	750
100°	670
80°	600
60°	540
40°	490
20°	430
0°	380
- 20°	315
- 40°	275

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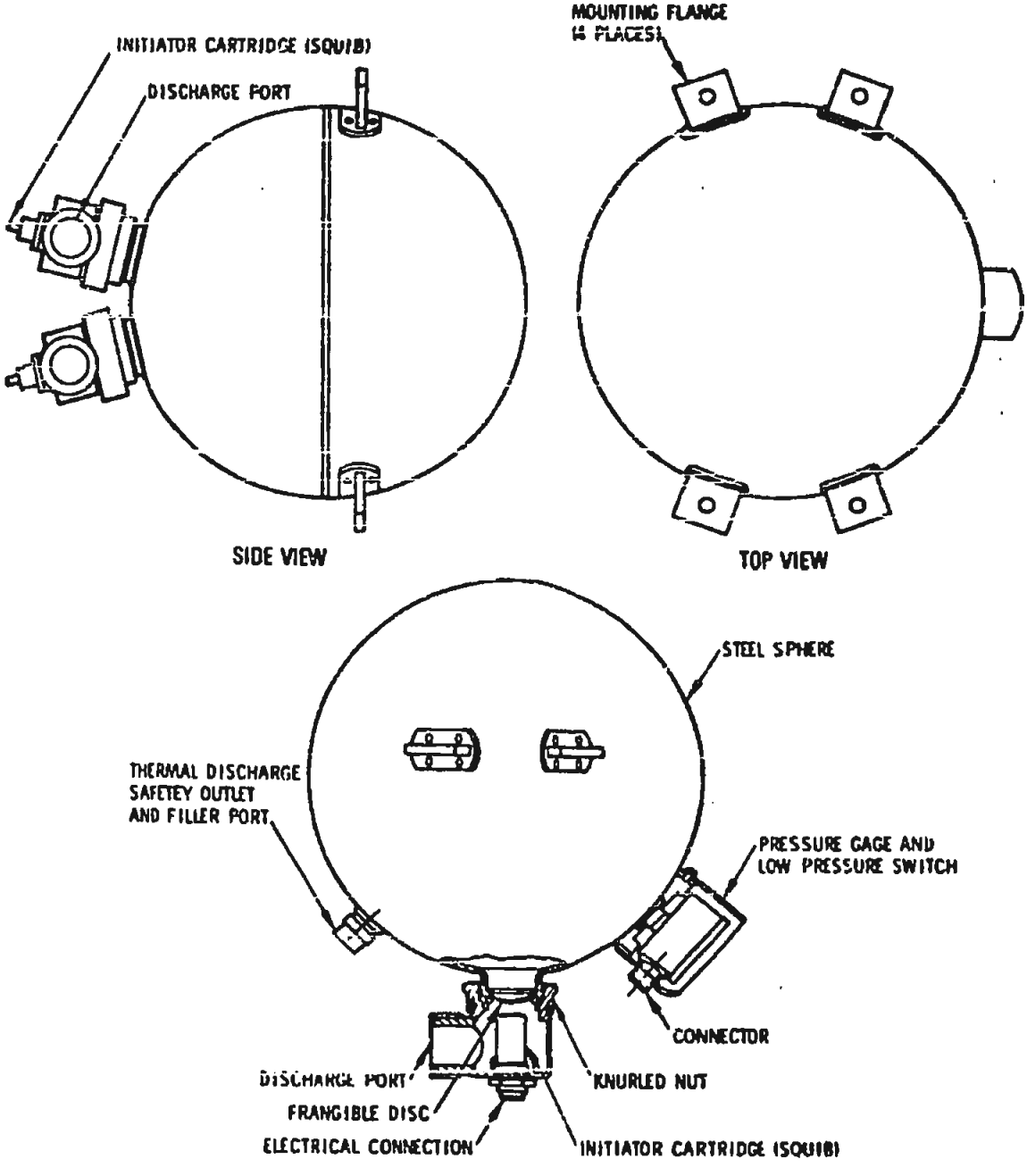
R
R Fire Extinguisher Container Pressure/Temperature Chart
Figure 7



R
R 630-cubic-inch Extinguisher Container
Figure 8

in full flow of the extinguisher agent through the discharge valve.

5. APU External Control Panel

A. Description

An APU external control panel is provided on the bottom centerline of the fuselage, zone 142 (Ref. Fig. 9).

The control panel contains the circuitry and indicator lights for APU fire warning and for the main and the alternate fire extinguisher containers discharge indication. A pushbutton TEST switch is provided to test the MAIN DISCH and ALT DISCH indicator lights. An APU remote control handle is provided for APU shutdown and fire extinguishing. A NORM STOP pushbutton switch is provided for normal shutdown of the APU (Ref. 49-61-00).

Six normally closed switches are actuated when the handle is pulled downward (approximately) 45 degrees. A pull force of 15 to 20 pounds is required to clear the lock. The applicable fire extinguish system is activated when the handle is rotated clockwise to the main position or counterclockwise to the alternate position, (approximately) 20 degrees. A twist force of 20 to 40 pound-inches is required to rotate the control handle in either direction.

B. Operation

Pulling the control handle downward actuates six internal switches the APU.

When the External Fire Pull Handle is pulled the following events occur:

The APU firewall fuel shutoff valves close (Ref. 49-61-00).

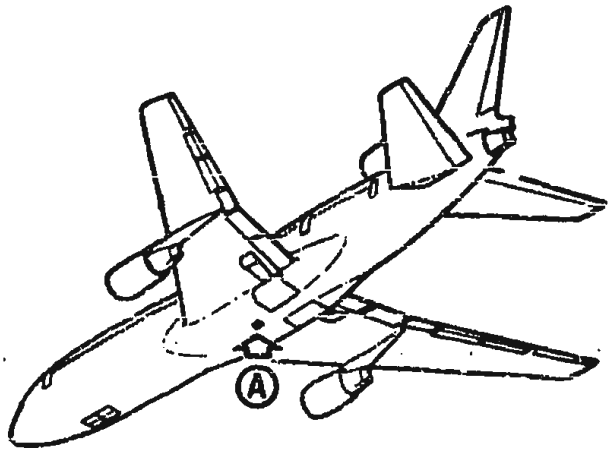
The APU inlet and ejector doors closed (Ref. 49-61-00).

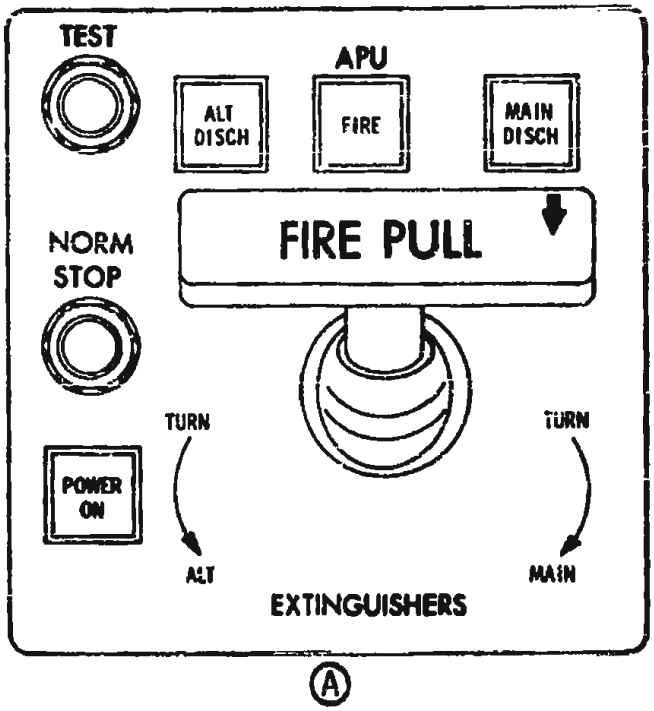
The generator deenergizes (Ref. 24-20-00).

The APU fire horn is silenced.

The control handle lock is released so the control handle can be rotated in either direction.

Rotating the control handle in either direction applies 28V dc to the indicated fire extinguisher container causing it to discharge its contents.





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APU External Control Panel
Figure 9

ENGINE/APU FIRE EXTINGUISHING SYSTEM - FAULT ISOLATION

R 1. General

R The diagrams and schematics in this section can be used for fault isolation any time a fault is reported or suspected. The PREREQUISITES listed at the top of each fault isolation diagram must be satisfied prior to starting fault isolation. Uncommon abbreviations are defined on the using fault code diagram or schematic.

R If the flight crew reports a trouble using a fault code number, the code number can be found in the Fault Isolation Reference Table in the Chapter 26 Fault Code Index. The index specifies the exact maintenance manual section, fault isolation diagram, and block number on the diagram where the fault isolation procedure should start. Schematics are included at the end of the section to supplement the fault code diagrams or as an aid in isolating a problem not covered on the diagrams.

R Refer to the Maintenance Manual Introduction for a more detailed discussion of the Fault Isolation Reporting Method (FIRM) and use of fault isolation diagrams/schematics.

R 2. Fault Isolation/Identification

Table 101 is a list of all fault isolation data in this section of the manual.

Engine/APU Fire Extinguishing System Fault Isolation
Table 101

FIGURE	TITLE
101	Engine/APU Fire Extinguisher Component Location Index.
102	Engine/APU Fire Extinguisher Component Locator.
103	Engine and APU Fire Extinguishing Squib System Test, Fault Isolation.
104	Engine and APU Fire Extinguisher MAIN or ALTN Discharge Legend(s) ON.
SCHEM 1	Engine No. 1 Fire Extinguishing System Schematic.
SCHEM 2	Engine No. 2 Fire Extinguishing System Schematic.

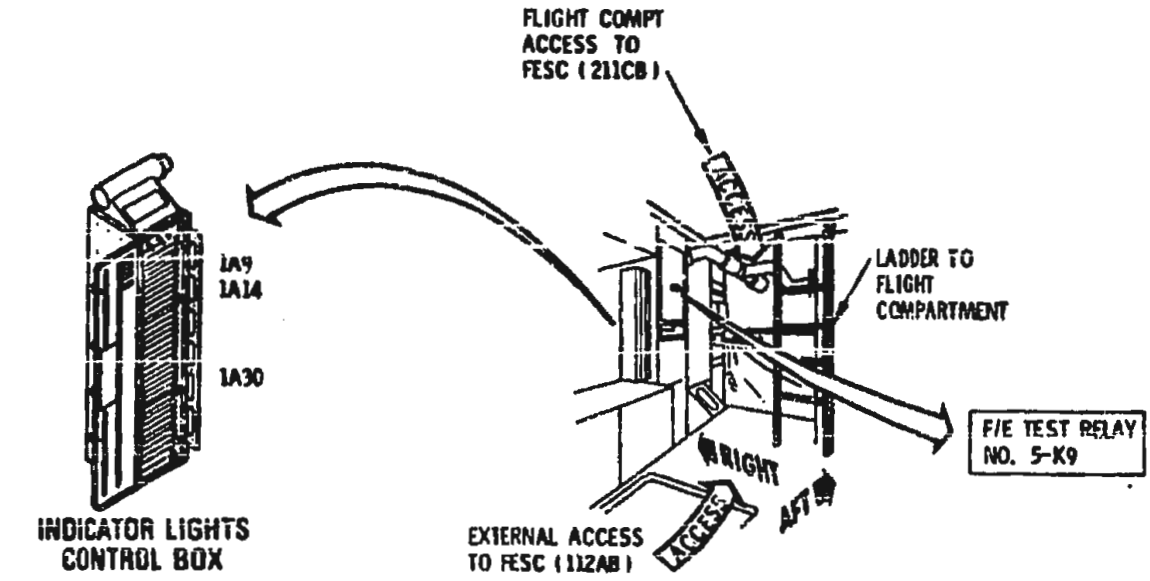
Engine/APU Fire Extinguishing System Fault Isolation (Cont)
Table 101

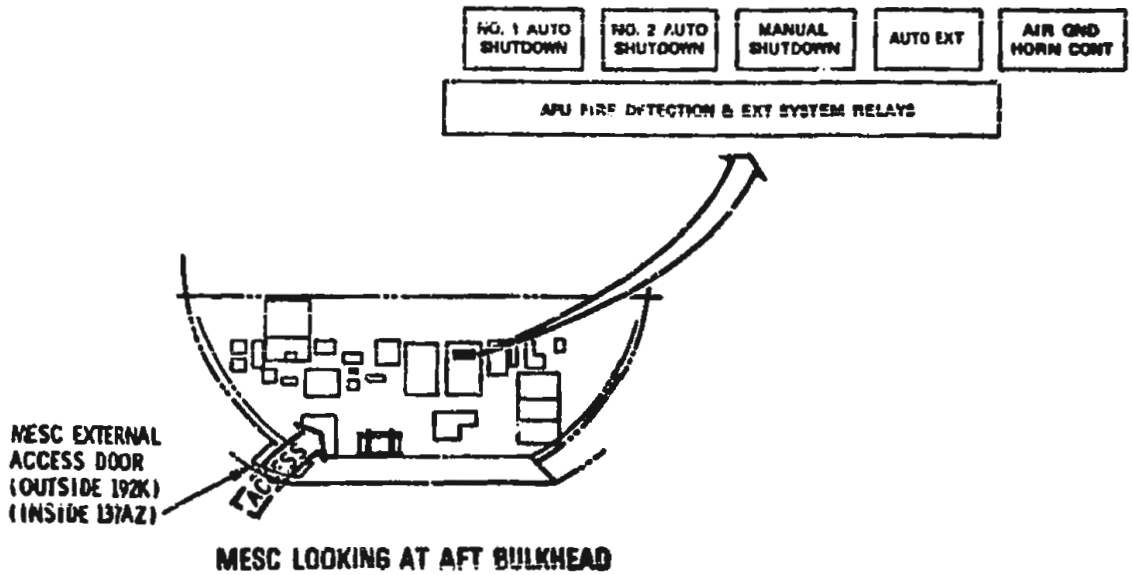
FIGURE	TITLE
SCHEM 5	Engine No. 3 Fire Extinguishing System Schematic.
SCHEM 4	APU Fire Extinguishing System Schematic.

COMPONENT	QTY	AREA/ACCESS	REFERENCE
CARD 1A30 – INDICATOR LIGHT CONTROL BOX	1	FESC/112AB, 211CB	33-17-04
PANEL – FIRE EXTINGUISHER TEST	1	FLT STA/FE/SO P11	26-21-15
RELAY – AUTO APU FIRE EXTINGUISH 2621-K1	1	MESC/192ER-1	49-61-05
RELAY – ALT SYSTEM TEST 2621-K3	1	FLT STA/FE/SO OVHD	20-24-01
RELAY – MAIN SYSTEM TEST 2621-K2	1	FLT STA/FE/SO OVHD	20-24-01
SQUIB – INITIATOR CARTRIDGE	4	ON FIRE BOTTLE/317BB	26-21-04

M1-0000-26-1063

R Engine/APU Fire Extinguisher Component Location Index
R Figure 101

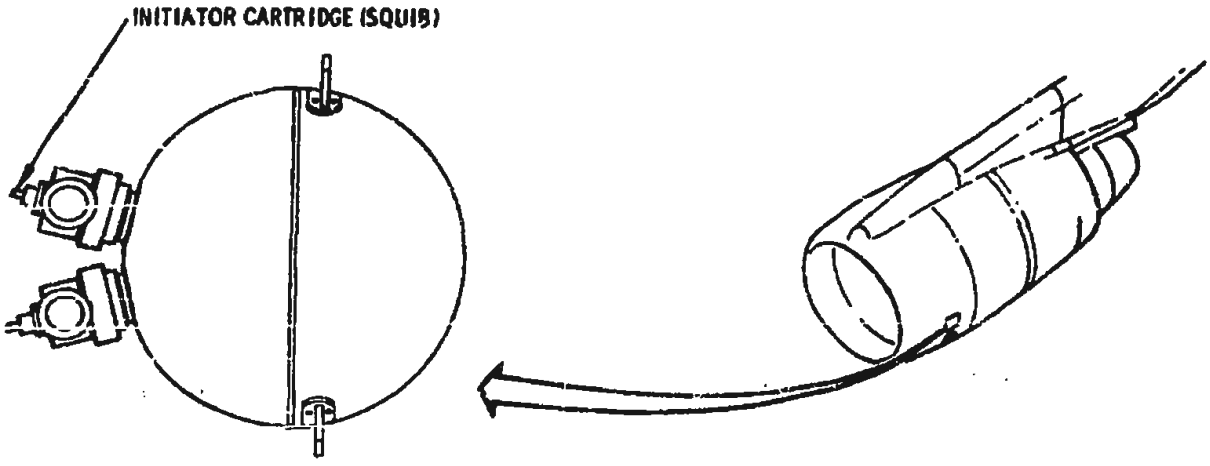




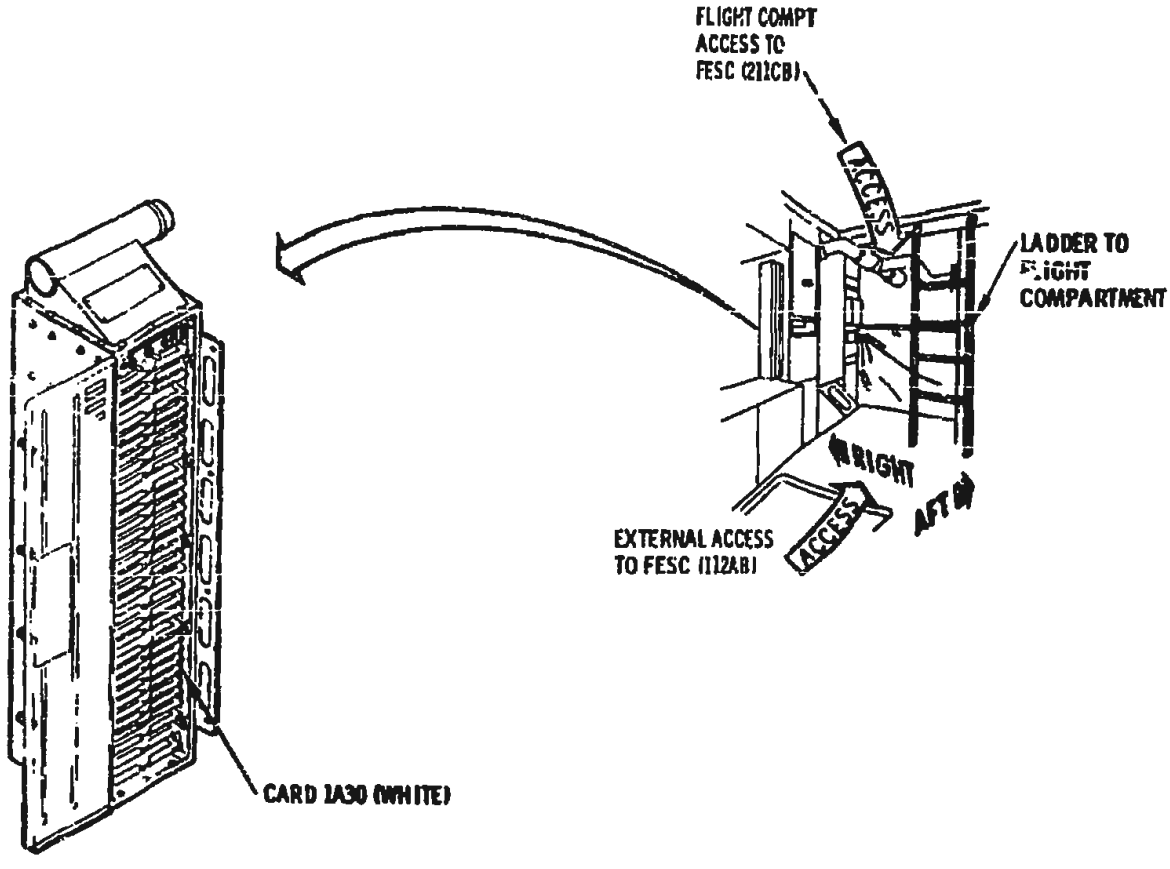
MESC LOOKING AT AFT BULKHEAD

M1-0100-26-119

Engine/APU Fire Extinguisher Component Locator
Figure 102 (Sheet 1)

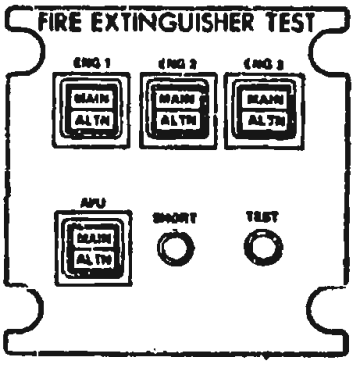


SIDE VIEW
INITIATOR CARTRIDGE

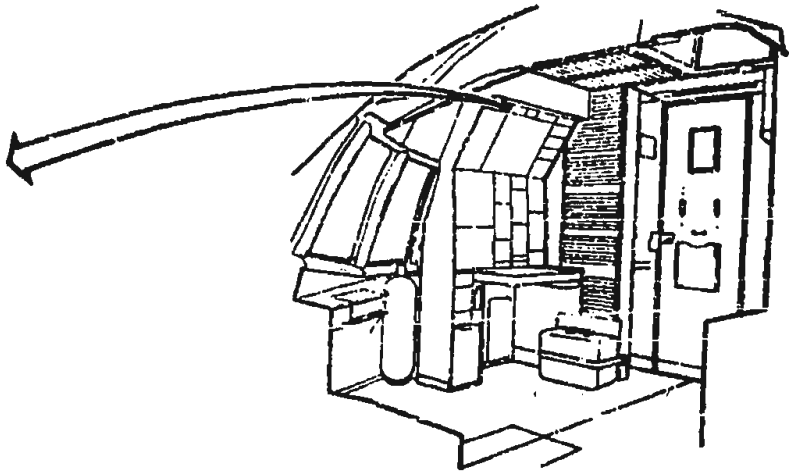


M1-0000-26-567

Engine/APU Fire Extinguisher Component Locator
Figure 102 (Sheet 2)

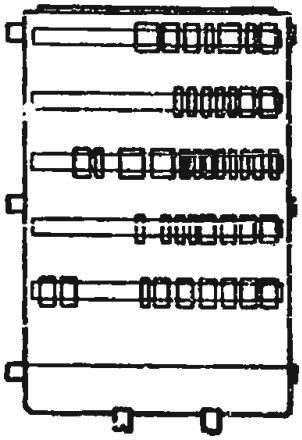


FIRE EXTINGUISHER TEST PANEL

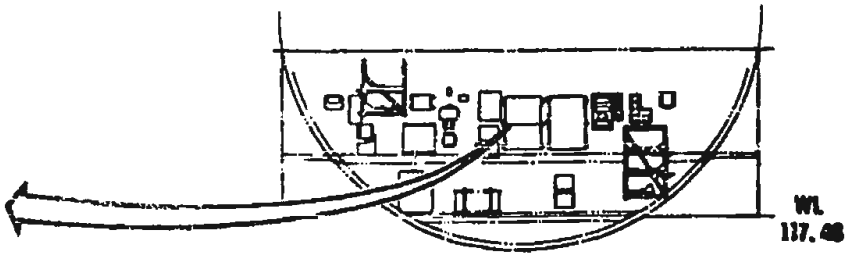


ZONE 215

FLIGHT ENGINEER/SECOND OFFICERS STATION



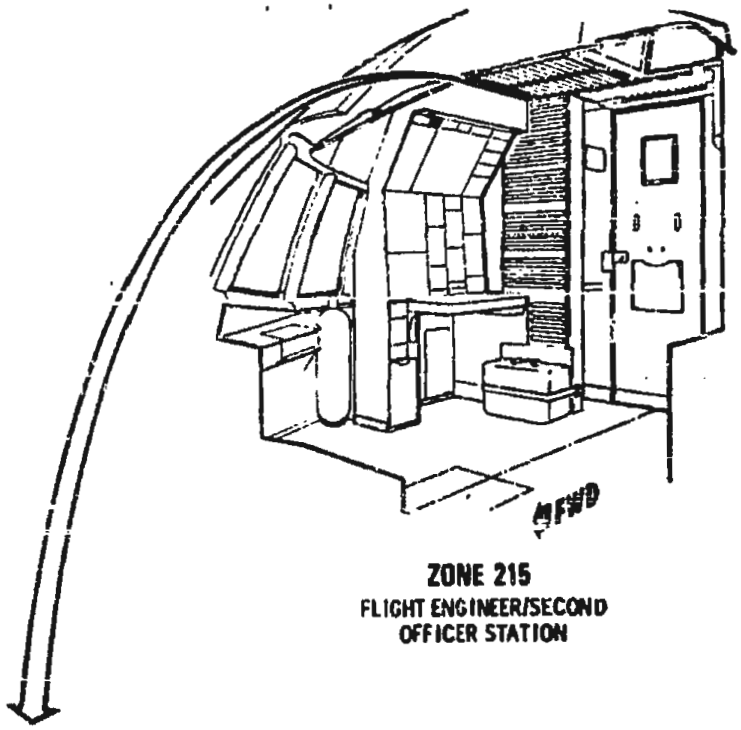
AUTO APU FIRE
EXTINGUISH TEST

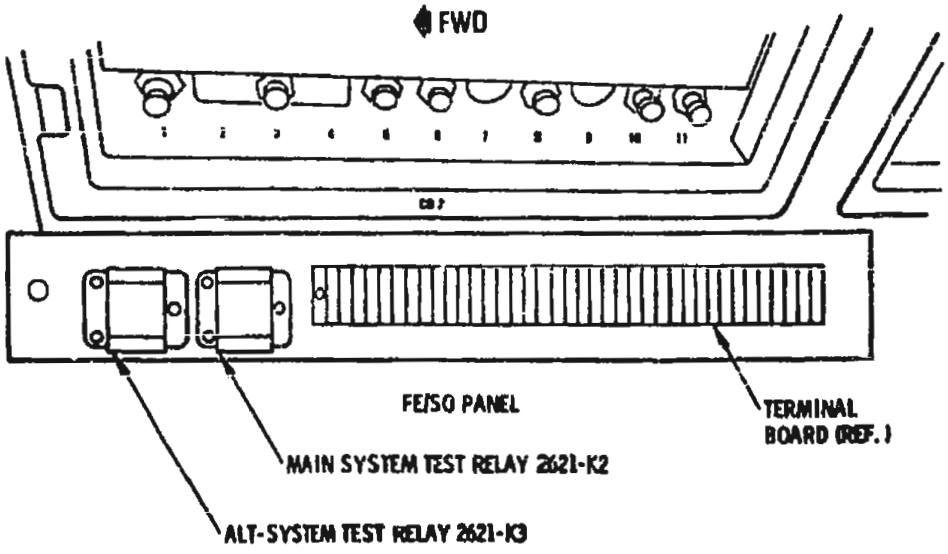


MID ELECTRICAL SERVICE CENTER
LOOKING AFT AT FS 983

M1-0000-26-044

Engine/APU Fire Extinguisher Component Locator
Figure 102 (Sheet 3)





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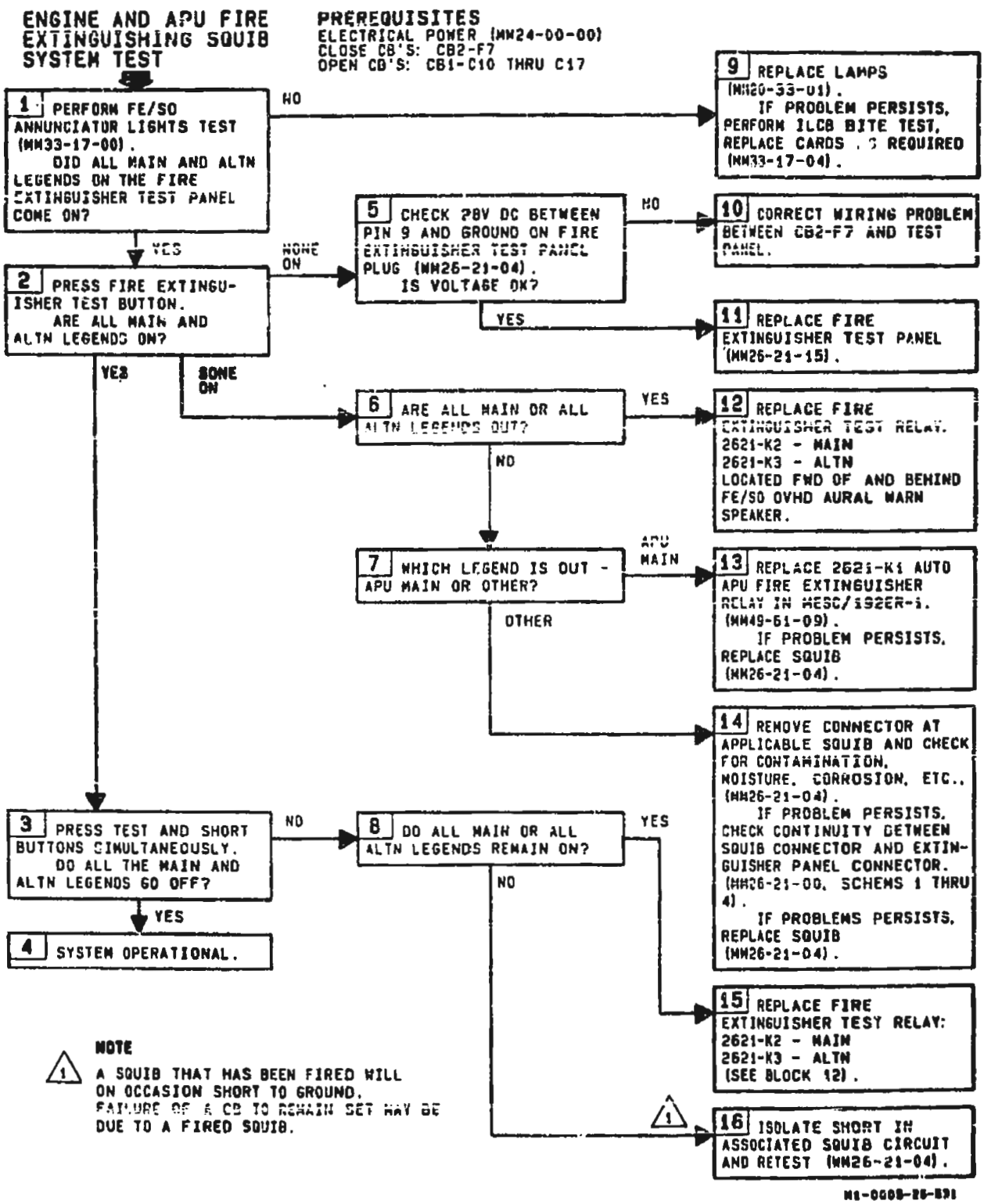
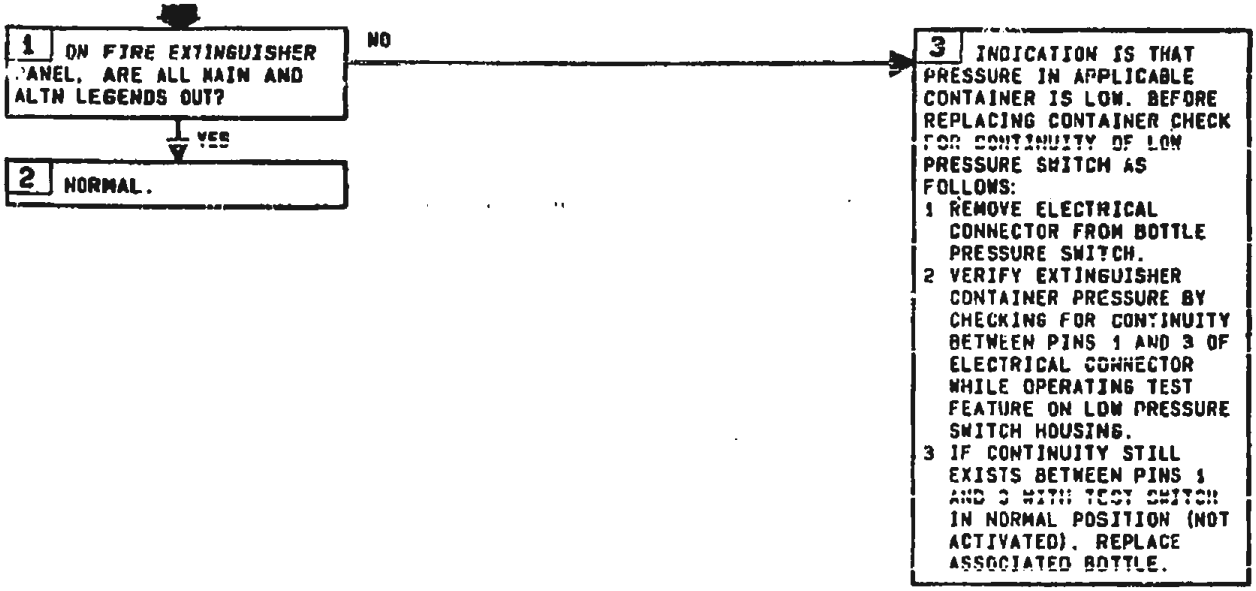
Engine/APU Fire Extinguisher Component Locator
Figure 102 (Sheet 4)


ENGINE AND APU FIRE EXTINGUISHING SQUIB SYSTEM TEST
PREREQUISITES
ELECTRICAL POWER (MM24-00-00)
CLOSE CB'S: CB2-F7
OPEN CB'S: CB1-C10 THRU C17
1 PERFORM FE/SO ANNUNCIATOR LIGHTS TEST (MM33-17-00). DID ALL MAIN AND ALTN LEGENDS ON THE FIRE EXTINGUISHER TEST PANEL COME ON?
NO
YES
9 REPLACE LAMPS (MM20-33-01). IF PROBLEM PERSISTS, PERFORM ILCB BITE TEST, REPLACE CARDS , S REQUIRED (MM33-17-04).
2 PRESS FIRE EXTINGUISHER TEST BUTTON. ARE ALL MAIN AND ALTN LEGENDS ON?
NONE ON
5 CHECK 28V DC BETWEEN PIN 9 AND GROUND ON FIRE EXTINGUISHER TEST PANEL PLUG (MM26-21-04). IS VOLTAGE OK?
NO
10 CORRECT WIRING PROBLEM BETWEEN CB2-F7 AND TEST PANEL.
YES
11 REPLACE FIRE EXTINGUISHER TEST PANEL (MM26-21-15).
YES
SOME ON
6 ARE ALL MAIN OR ALL ALTN LEGENDS OUT?
YES
12 REPLACE FIRE EXTINGUISHER TEST RELAY. 2621-K2 - MAIN 2621-K3 - ALTN LOCATED FWD OF AND BEHIND FE/SO OVHD AURAL WARN SPEAKER.
NO
7 WHICH LEGEND IS OUT - APU MAIN OR OTHER?
APU MAIN
13 REPLACE 2621-K1 AUTO APU FIRE EXTINGUISHER RELAY IN MESC/1S2ER-1. (MM49-61-09). IF PROBLEM PERSISTS, REPLACE SQUIB (MM26-21-04).
OTHER
14 REMOVE CONNECTOR AT APPLICABLE SQUIB AND CHECK FOR CONTAMINATION, MOISTURE, CORROSION, ETC., (MM26-21-04). IF PROBLEM PERSISTS, CHECK CONTINUITY BETWEEN SQUIB CONNECTOR AND EXTINGUISHER PANEL CONNECTOR. (MM26-21-00, SCHEMS 1 THRU 4). IF PROBLEMS PERSISTS, REPLACE SQUIB (MM26-21-04).
3 PRESS TEST AND SHORT BUTTONS SIMULTANEOUSLY. DO ALL THE MAIN AND ALTN LEGENDS GO OFF?
NO
8 DO ALL MAIN OR ALL ALTN LEGENDS REMAIN ON?
YES
NO
YES
4 SYSTEM OPERATIONAL.
15 REPLACE FIRE EXTINGUISHER TEST RELAY: 2621-K2 - MAIN 2621-K3 - ALTN (SEE BLOCK 12).
1
16 ISOLATE SHORT IN ASSOCIATED SQUIB CIRCUIT AND RETEST (MM26-21-04).
NOTE
1 A SQUIB THAT HAS BEEN FIRED WILL ON OCCASION SHORT TO GROUND. FAILURE OF A CB TO REMAIN SET MAY BE DUE TO A FIRED SQUIB.
M1-0009-26-831

R Engine and APU Fire Extinguishing Squib System Test, Fault Isolation
R Figure 103

PREREQUISITES
ELECTRICAL POWER (MM24-00-00)
OPEN CB'S: CB1-C10 THRU C17, CB2-F7

ENGINE AND APU FIRE EXTINGUISHER MAIN OR APU DISCHARGE LIGHT(S) ON


1 ON FIRE EXTINGUISHER PANEL, ARE ALL MAIN AND ALTN LEGENDS OUT?
NO
YES
2 NORMAL.
3 INDICATION IS THAT PRESSURE IN APPLICABLE CONTAINER IS LOW. BEFORE REPLACING CONTAINER CHECK FOR CONTINUITY OF LOW PRESSURE SWITCH AS FOLLOWS:
1 REMOVE ELECTRICAL CONNECTOR FROM BOTTLE PRESSURE SWITCH.
2 VERIFY EXTINGUISHER CONTAINER PRESSURE BY CHECKING FOR CONTINUITY BETWEEN PINS 1 AND 3 OF ELECTRICAL CONNECTOR WHILE OPERATING TEST FEATURE ON LOW PRESSURE SWITCH HOUSING.
3 IF CONTINUITY STILL EXISTS BETWEEN PINS 1 AND 3 WITH TEST SWITCH IN NORMAL POSITION (NOT ACTIVATED), REPLACE ASSOCIATED BOTTLE.

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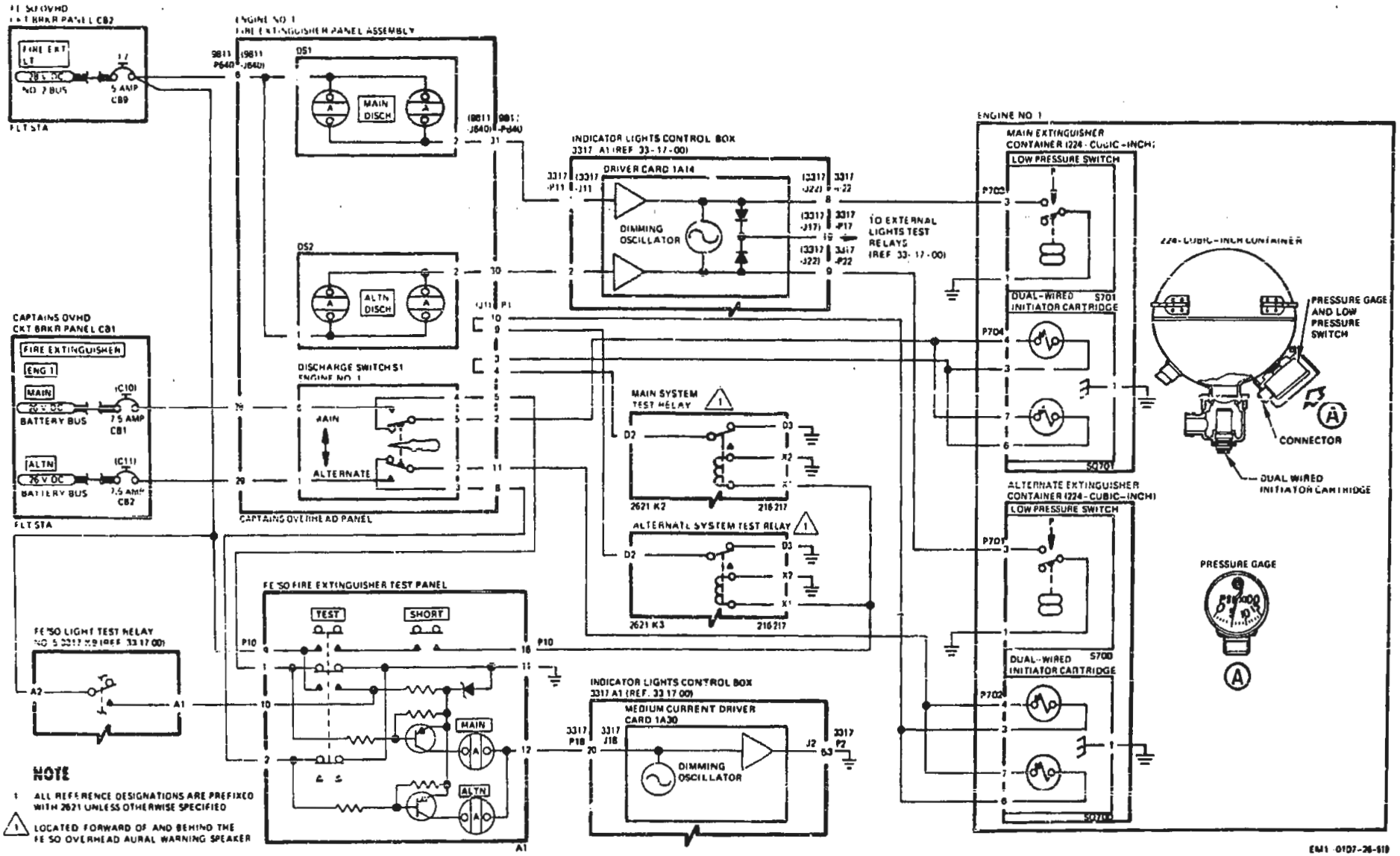
R Engine and APU Fire Extinguisher Main or ALTN Discharge Legend(s)
R ON, Fault Isolation
R Figure 104

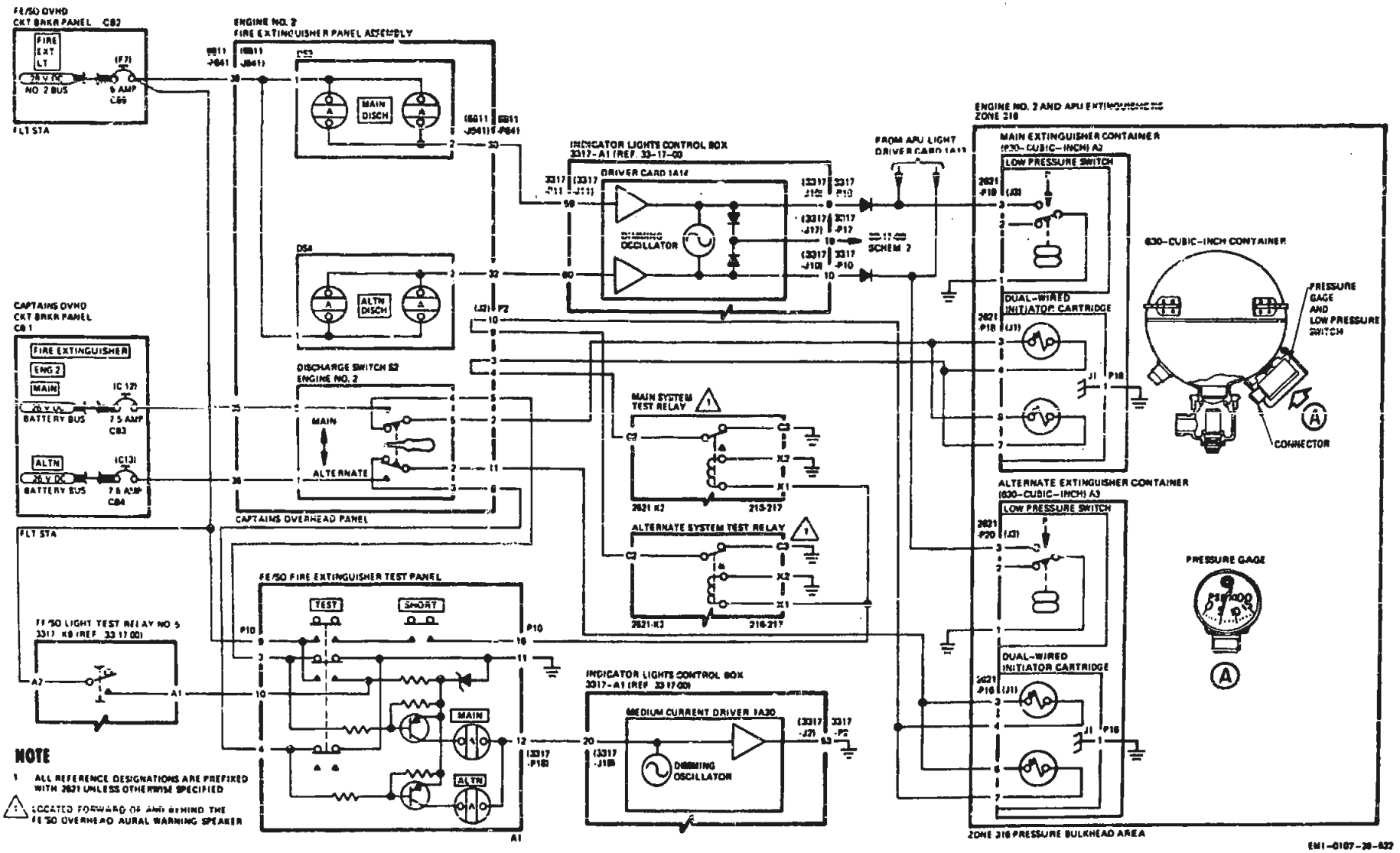
R EFFECTIVITY: ALL
R
001B



R Engine No. 1 Fire Extinguishing System Schematic
R SCHEM 1

EFFECTIVITY: ALL

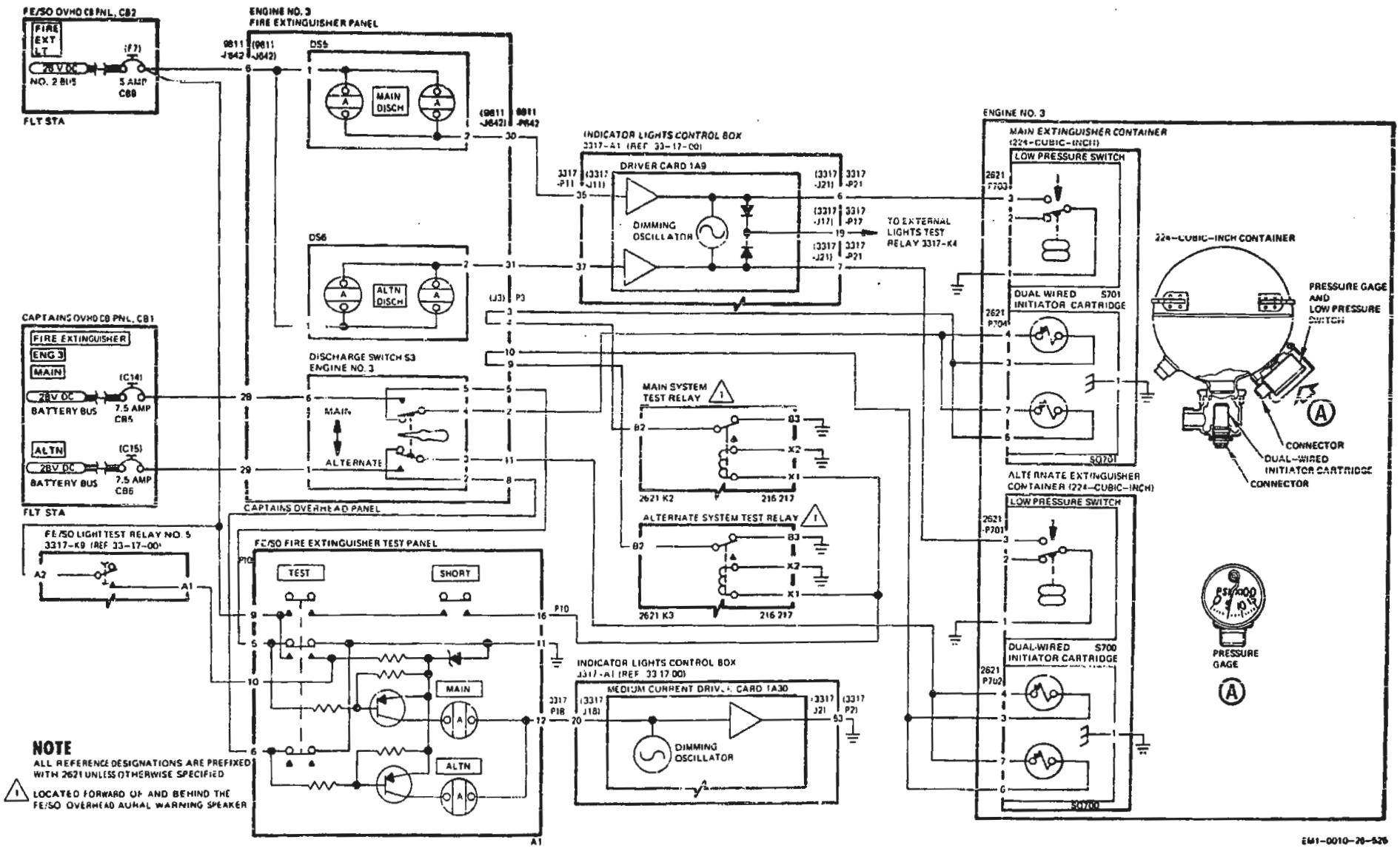
0018



R Engine No. 2 Fire Extinguishing System Schematic
R SCHEM 2

EFFECTIVITY: ALL

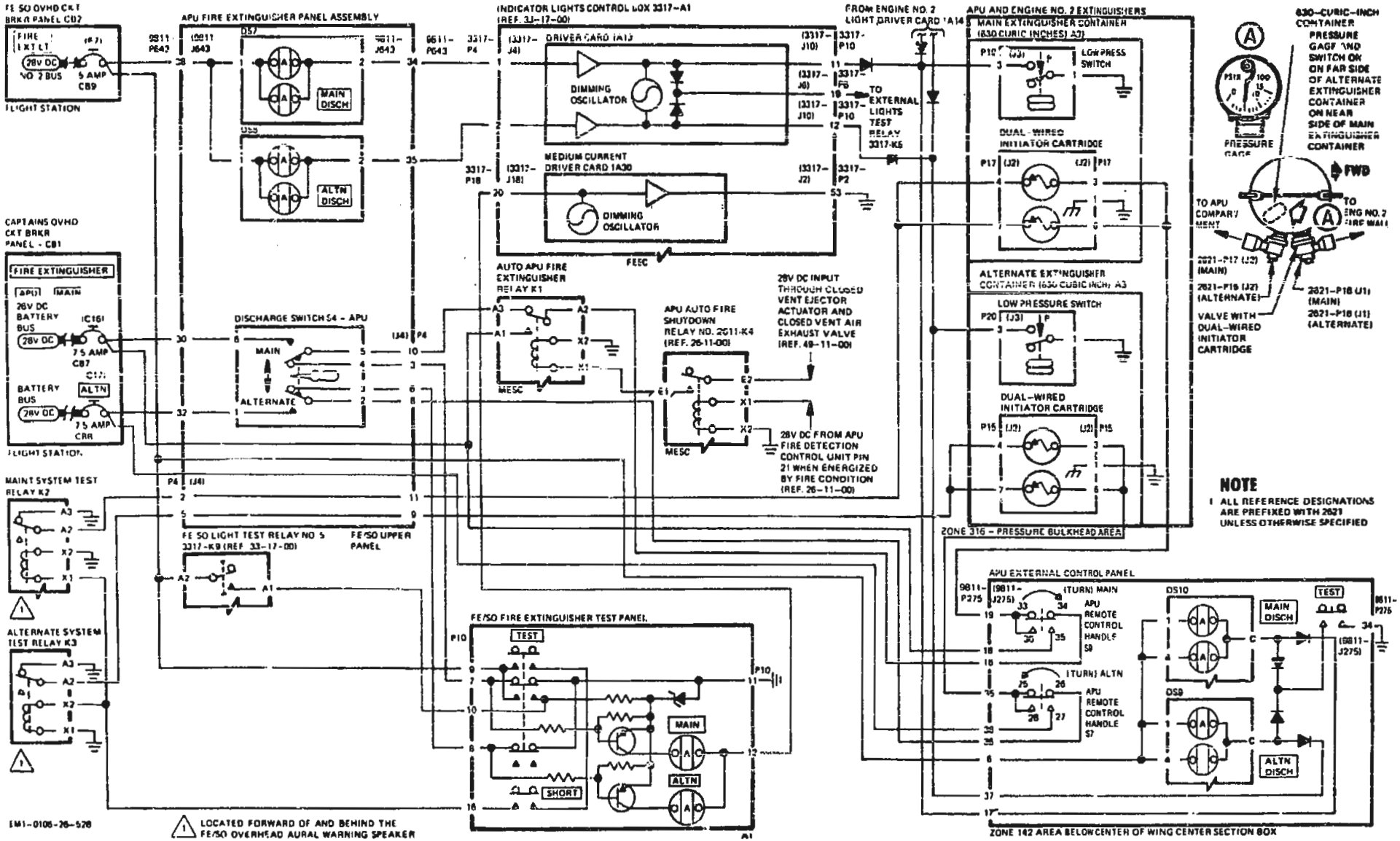
001B



R Engine No. 3 Fire Extinguishing System Schematic
R SCHEM 3

EFFECTIVITY: ALL

001B


APU FIRE EXTINGUISHER PANEL ASSEMBLY
INDICATOR LIGHTS CONTROL BOX 3317-A1
(REF. 33-17-00)
DRIVER CARD 1A13
DIMMING OSCILLATOR
MEDIUM CURRENT DRIVER CARD 1A30
DIMMING OSCILLATOR
FEEC
FROM ENGINE NO. 2 LIGHT DRIVER CARD 1A14
TO EXTERNAL LIGHTS TEST RELAY 3317-K5
APU AND ENGINE NO. 2 EXTINGUISHERS
MAIN EXTINGUISHER CONTAINER (630 CUBIC INCHES) A2
LOW PRESS SWITCH
DUAL-WIRED INITIATOR CARTRIDGE
ALTERNATE EXTINGUISHER CONTAINER (630 CUBIC INCH) A3
LOW PRESSURE SWITCH
DUAL-WIRED INITIATOR CARTRIDGE
630-CUBIC-INCH CONTAINER
PRESSURE GAGE AND SWITCH ON ON FAR SIDE OF ALTERNATE EXTINGUISHER CONTAINER ON NEAR SIDE OF MAIN EXTINGUISHER CONTAINER
PRESSURE GAGE
FWD
TO APU COMPARTMENT
TO ENG NO. 2 FIRE WALL
VALVE WITH DUAL-WIRED INITIATOR CARTRIDGE
2621-P17 (J2) (MAIN)
2621-P15 (J2) (ALTERNATE)
2621-P16 (J1) (MAIN)
2621-P16 (J1) (ALTERNATE)
FE SO OVHD CKT BRKR PANEL CB2
FLIGHT STATION
CAPTAINS OVHD CKT BRKR PANEL - CB1
FIRE EXTINGUISHER
APU
MAIN
28V DC BATTERY BUS
28V DC
7.5 AMP CB7
BATTERY BUS
ALTN
7.5 AMP CB8
FLIGHT STATION
DISCHARGE SWITCH S4 - APU
MAIN
ALTERNATE
AUTO APU FIRE EXTINGUISHER RELAY K1
MESC
APU AUTO FIRE SHUTDOWN RELAY NO. 2611-K4 (REF. 26-11-00)
MESC
28V DC INPUT THROUGH CLOSED VENT EJECTOR ACTUATOR AND CLOSED VENT AIR EXHAUST VALVE (REF. 49-11-00)
28V DC FROM APU FIRE DETECTION CONTROL UNIT PIN 21 WHEN ENERGIZED BY FIRE CONDITION (REF. 26-11-00)
MAINT SYSTEM TEST RELAY K2
ALTERNATE SYSTEM TEST RELAY K3
FE SO LIGHT TEST RELAY NO 5 3317-K9 (REF. 33-17-00)
FE/SO UPPER PANEL
FE/SO FIRE EXTINGUISHER TEST PANEL
TEST
MAIN
ALTN
SHORT
APU EXTERNAL CONTROL PANEL
(TURN) MAIN
APU REMOTE CONTROL HANDLE S9
(TURN) ALTN
APU REMOTE CONTROL HANDLE S7
DS10
DS9
MAIN DISCH
ALTN DISCH
TEST
ZONE 316 - PRESSURE BULKHEAD AREA
ZONE 142 AREA BELOW CENTER OF WING CENTER SECTION BOX
NOTE
1 ALL REFERENCE DESIGNATIONS ARE PREFIXED WITH 2621 UNLESS OTHERWISE SPECIFIED
EM1-0106-26-526
LOCATED FORWARD OF AND BEHIND THE FE/SO OVERHEAD AURAL WARNING SPEAKER

R APU Fire Extinguishing System Schematic
R SCHEM 4

EFFECTIVITY: ALL

0018

ENGINE/APU FIRE EXTINGUISHING SYSTEM - ADJUSTMENT AND TEST

1. General

The following procedure contains a BITE Test and Operational Test. The BITE Test specifies the method used to test the engine/APU fire extinguishing system using the FIRE EXTINGUISHING TEST panel. The Operational Test specifies the sections of the various chapters that may be used to verify operation of the components actuated by the FIRE PULL handles.

2. Referenced Procedure

R	24-20-00	AC Generation - Adjustment and Test
	24-41-00	External Power/Ground Service System - Maintenance Practices
R	28-24-00	Engine Fuel Feed System - Adjustment and Test
R R	29-11-32	Hydraulic Firewall Shutoff Valve - Adjustment and Test
R	36-11-00	Engine Bleed Air System - Adjustment and Test
R	49-00-01	Auxiliary Power Unit (APU) - Adjustment and Test
R R	75-21-04	Air Inlet Shutoff Valve (Zone 1) Engines No. 1 and 3 - Adjustment and Test
R R	75-21-05	Air Inlet Shutoff Valve (Zone 1) Engine No. 2 - Adjustment and Test

3. Adjustment/Test

A. BITE (Continuity) Test

(1) Turn on electrical power (Ref. 24-41-00).

(2) On Flight Engineer/Second Officers overhead circuit breaker panel CB2, zone 215, verify that INDICATOR F/E IND LT TEST 5 (H5) and FIRE EXT LT (F7) circuit breakers are closed.

(3) On Flight Engineer/Second Officers lower panel, zone 215, depress and release the TEST switchlight on the LIGHTS panel.

NOTE: The TEST switchlight is an alternate-action switch and will remain latched in until depressed and released again.

(4) On the Flight Engineer/Second Officers upper panel, zone 215, verify that all FIRE EXTINGUISHER TEST panel indicator lights are on (Ref. Fig. 501).

(5) Depress and release TEST switchlight on LIGHTS panel and verify that all FIRE EXTINGUISHER TEST panel indicator lights go off.

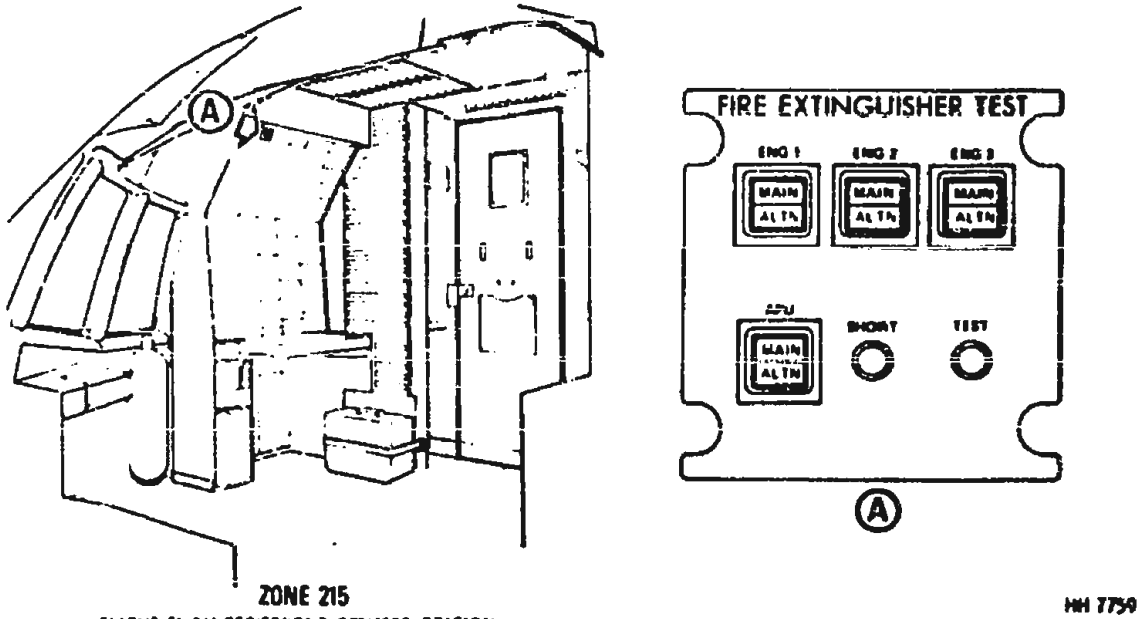
(6) Depress the TEST pushbutton switch on the FIRE EXTINGUISHER TEST panel and verify that all indicator lights come on and remain on while the TEST switch is held depressed.

(7) While holding TEST switch depressed, depress SHORT switch and verify that all indicator lights go off.

(8) Release SHORT switch. Indicator lights come on.

(9) Release the TEST switch. Indicator lights go off.

B. Operational Test



Fire Extinguisher Test Panel
Figure 501

(1) Operational tests of the components actuated by the FIRE PULL handles are located as follows:

(a) Fuel Firewall Shutoff Valves

28-24-00, Engine Fuel Feed System - Adjustment and Test

(b) Hydraulic Firewall Shutoff Valves

29-11-32, Hydraulic Firewall Shutoff Valve - Adjustment and Test

(c) Engine Isolation Valves

36-11-00, Engine Bleed Air System - Adjustment and Test

(d) On aircraft 001-031 without SB26-016, Engine Ventilation Air Inlet Shutoff Valves

75-21-04, Air Inlet Shutoff Valve (Zone 1) Engines No. 1 and 3 - Adjustment and Test

75-21-05, Air Inlet Shutoff Valve (Zone 1) Engine No. 2 - Adjustment and Test

(e) Generators

24-20-00, AC Generation - Adjustment and Test

(f) APU Fuel Firewall Shutoff Valve, Air Vent Valve, Vent Ejector Actuator, and APU Duct Isolation Valve.

49-00-01 Auxiliary Power Unit (APU) - Adjustment and Test

C. Functional Check

(1) Before actuating ENG NO. 1 FIRE PULL handle, open and
R tag the following circuit breakers on Pilots overhead
R circuit breaker panel CB1, zone 210:

FIRE DETECTION

MASTER ALARM PWR - ENG 1 (J1)

R FIREBELL PWR (J6)

R GEN CONTROL UNITS - GEN 1 (K15)

R ENGINE BLEED CONTROL - ENG ISLN VALVES - ENG 1 (G10)

R FUEL SHUTOFF VALVE - TANK - ENG 1 (D10)

R HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS A (L15)

R HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS B (L16)

On the Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215:

ENG 1 - EMER & L X FEED (T7)

ENG 1 - TANK VALVE (T6)

On aircraft 001-031 without SB26-016,
ENG 1 - ACCESS VENT AIR (N1)

(1) Before actuating ENG NO. 2 FIRE PULL handle, open and tag the following circuit breakers:

On the pilots overhead circuit breaker panel CB1, zone 210:

FIRE DETECTION

R MASTER ALARM PWR - ENG 2 (J2)

R FIREBELL PWR (J6)

R GEN CONTROL UNITS - GEN 2 (K16)

R ENGINE BLEED CONTROL - ENG ISLN VALVES - ENG 2
R (G11)

R FUEL SHUTOFF VALVES - TANK - ENG 2 (D11)

R FUEL SHUTOFF VALVE - TANK - PRI EMER - 2 (D14)

R HYD - PUMP & FIREWALL SHUTOFF VALVE C (L17)

R HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS
R B (L16)

On the Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215:

ENG 2 - TANK (T9)

ENG 2 - SEC EMER CX FEED (T10)

INSTR & CONTROLS - ALL ENGINES - ENG-2-PRI EMER (R18)

R On aircraft C01-031 without SB26-016,
ENG 2 - ACCESS VENT AIR (N7)

(1) Before actuating ENG NO. 3 FIRE PULL handle, open and tag the following circuit breakers:

On the pilots overhead circuit breaker panel CB1, zone 210:

FIRE DETECTION

MASTER ALARM PWR - ENG 3 (J3)

FIREBELL PWR (J6)

ENGINE BLEED CONTROL - ENG ISLN VALVES - ENG 3 (G12)

FUEL SHUTOFF VALVE - TANK - ENG 3 (D12)

GEN CONTROL UNITS - GEN 3 (K17)

HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS D (L18)

HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS B (L16)

On the Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215:

ENG 3 - TANK VALVE (T12)

ENG 3 - EMER & R XFEED (T13)On aircraft 001-031 without SB26-016,
ENG 3 - ACCESS VENT AIR (N13)

(1) Before actuating APU FIRE PULL handle, open and tag the following circuit breakers:

On pilots overhead circuit breaker panel CB1, zone 210:

FIRE DETECTION

MASTER ALARM PWR - WHL WELL APU (J4)

APU FIRE SHUTDOWN (J7)

FIREBELL PWR (J6)

APU SEC EMER SHUTOFF (J8)

APU FIRE DETECT

MASTER ALARM PWR (D18)

FIRE EXTINGUISHER - APU FIRE SHUTDOWN (C18)

FUEL SHUTOFF VALVE - PRI EMER - APU (D15)

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag the following circuit breakers:

APU POWER - APU GEN CONT UNIT (B17)

ESS BUS - APU BLEED AIR VALVE (S18)

APU BATT BUS - FIREWALL SHUTOFF - PRIM (S7)

APU BATT BUS - FIREWALL SHUTOFF - SEC (S8)

(2) Open applicable fire extinguisher panel 411 SL, 411 TL for engine No. 1, 421 SL, 421 TL for engine No. 3, or 316 CB for engine No. 2 or APU.

CAUTION: INSURE ELECTRIC POWER IS OFF BEFORE DISCONNECTING INITIATOR CARTRIDGE.

(3) Disconnect applicable electrical connector at initiator cartridge (squib).

(4) Turn on electrical power (24-41-00).

(5) On pilots overhead panel, zone 210, or on FE/SO upper panel, zone 215, pull applicable fire emergency FIRE PULL handle.

(6) Actuate fire extinguisher discharge switch to MAIN DISCH position and check for 28V dc at initiator
R cartridge between pin numbers as follows:

R (a) ENG 1 - pins 4 and 3, and pins 7 and 6

R (b) ENG 2 and APU - pins 3 and 4, and pins 6 and 7

R (c) ENG 3 - pins 4 and 3, and pins 7 and 6

(7) Actuate fire extinguisher discharge switch to ALTN DISCH position and check for 28V dc at initiator
R cartridge between pin numbers as follows:

R (a) ENG 1 - pins 4 and 3, and pins 7 and 6

R (b) ENG 2 and APU - pins 3 and 4, and pins 6 and 7

R (c) ENG 3 - pins 4 and 3, and pins 7 and 6

(8) Return discharge switch to off position.

(9) Push FIRE PULL handle in.

(10) Turn off electrical power (24-41-00).

(11) Connect initiator cartridge electrical connector.

(12) Close fire extinguisher panel opened in Step (2).

(13) Remove tags and close circuit breakers opened in Step (1).

ENGINE/APU FIRE EXTINGUISHER SYSTEM - INSPECTION AND CHECK

1. General

An accumulation of water in the initiator cartridge valve assembly, from condensation or from washing the engine compartment, might affect the ability of the discharge squibs to rupture the container discs. The water can be drained from the valve assembly by the following procedure.

2. Equipment and Materials

Aluminum foil

R 3. Referenced Procedures

	26-21-00	Engine/APU Fire Extinguishing System - Adjustment and Test
R	6-30-00	Zoning Diagrams - Description and Operation

4. Inspection/Check

A. Water Drain Check

(1) On pilots overhead panel CB1, zone 210, open and tag applicable circuit breakers:

FIRE EXTINGUISHER

R ENG 1 MAIN (C10)

R ENG 1 ALTN (C11)

R ENG 2 MAIN (C12)

R ENG 2 ALTN (C13)

R ENG 3 MAIN (C14)

R ENG 3 ALTN (C15)

(2) Open applicable fire extinguisher container access
R panel 411SL, R11TL, zone 410, for engine No. 1, or
R 421SL, 421TL, zone 420, for engine No. 3, or 317BB,
R zone 310, for engine No. 2 (Ref. 06-30-00).

(3) Disconnect electrical connector from cartridge.

(4) Unscrew initiator cartridge from valve assembly.

(5) Short together all pins of the initiator cartridge with aluminum foil.

WARNING: IF CARTRIDGE IS TO BE REINSTALLED, KEEP IT DRY AND AWAY FROM POTENTIAL FIRE HAZARDS. MAINTAIN TEMPERATURE BELOW 100 DEGREES F AND PREFERABLY BELOW 70 DEGREES F.

IF CARTRIDGE IS TO BE REPLACED, KEEP THE CARTRIDGE DRY, PREFERABLY IN THE BAG IN WHICH THE NEW CARTRIDGE WAS PACKAGED. STORE THE REPLACED CARTRIDGE IN ACCORDANCE WITH ICC RULES FOR CLASS C EXPLOSIVES.

(6) Remove all moisture and corrosion from valve assembly.

(7) Remove aluminum foil from initiator cartridge.

(8) Install initiator cartridge in valve assembly.

(9) Torque initiator cartridge between 150 to 200 lb. in.

(10) Verify less than one volt exists between cable connector pins 3 and 4, and between 6 and 7.

CAUTION: CARTRIDGES SHOULD BE CONNECTED ONE AT A TIME FOLLOWED BY A TEST TO CONFIRM THAT THERE IS NO CROSS-CONNECTION (REF. 26-21-00).

(11) Verify that one interface seal is installed in cartridge and another in plug, then connect cable plug to cartridge.

NOTE: In order to assure proper electrical connection, the plug must be tightened until the red line on the cartridge is covered. If no line exists, tighten until the plug covers the shoulder above the threads by .03 inches.

CR
CR
CR

(12) Close and secure access door opened in Step 4A(2).

(13) Remove tags and close circuit breakers opened in Step 4A(1).

(14) Test system for circuit continuity and electrical shorts through each initiator cartridge (Ref. 26-21-00).

EXTINGUISHER CONTAINER (224-CUBIC-INCH) REMOVAL AND INSTALLATION

1. Equipment and Materials

Aluminum foil

Protective caps

2. Referenced Procedure

	26-21-00	Engine/APU Fire Extinguisher System - Adjustment and Test
R R	26-21-01	Extinguisher Container (224-Cubic-Inch) - Inspection and Check

3. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE EXTINGUISHER - ENG 1 MAIN (C10), ENG 1 ALTN (C11), ENG 3 MAIN (C14), and ENG 3 ALTN (C15).

(2) At engine 1 or 3 nose cowling open applicable fire extinguisher container access panel (411SL, 411TL, 421SL, 421TL)(Ref. Fig. 401).

R R R WARNING: A DISCHARGE HEAD (VALVE ASSEMBLY) ATTACHED TO EACH EXTINGUISHER CONTAINER CONTAINS AN ELECTRICALLY INITIATED CARTRIDGE TYPE EXPLOSIVE DEVICE. DO NOT CONNECT ANY FORM OF ELECTRICAL POWER TO THE ELECTRICAL CONNECTOR WHEN REMOVING OR INSTALLING THE CONTAINER OR CARTRIDGE.

(3) Disconnect electrical harness connectors at cartridge and pressure switch.

C (4) Deleted.

(5) Short together all pins of the cartridge with a wad of aluminum foil.

(6) If lower (main) extinguisher container is to be removed, remove interphone jack bracket, and allow bracket to hang inside nose cowl out of access opening.

R (7) First loosen thermal discharge tube at T-joint fitting, R then disconnect tube at container fitting and install R protective cap.

R (8) Disconnect discharge tube at discharge head.

R (9) Back off the container nut until discharge head is free R to rotate.

R CAUTION: USE EXTREME CARE WHEN HANDLING EXTINGUISHER R CONTAINERS WITH EXPOSED FRANGIBLE DISCS.

(10) Remove container attach bolts and washers and remove container from the nose cowl.

R (11) Separate discharge head from container and install a R vented protective cap at frangible disc.

B. Installation

NOTE: Before installing container, verify that container is R properly charged (Ref. 26-21-01) and that there is no continuity between pins 1 and 3 of the low pressure switch.

(1) Verify that circuit breakers opened in Step 3A(1) are open and tagged.

WARNING: USE EXTREME CARE WHEN HANDLING CHARGED CONTAINER WITH EXPOSED FRANGIBLE DISCS.

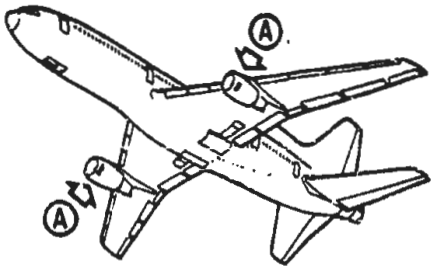
(2) Remove protective cap from thermal discharge port.

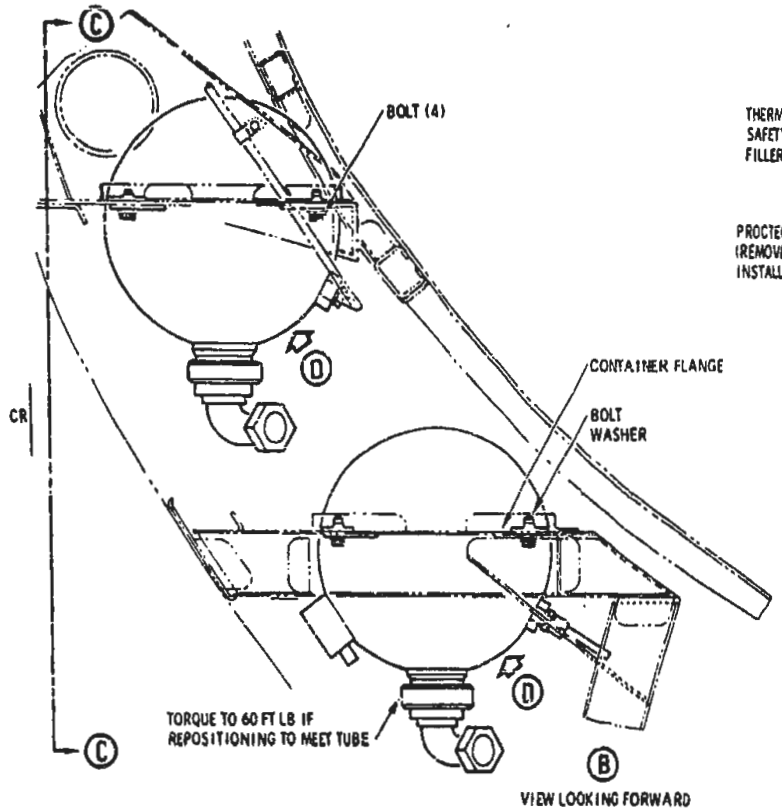
R (3) Remove protective cap at container discharge port.

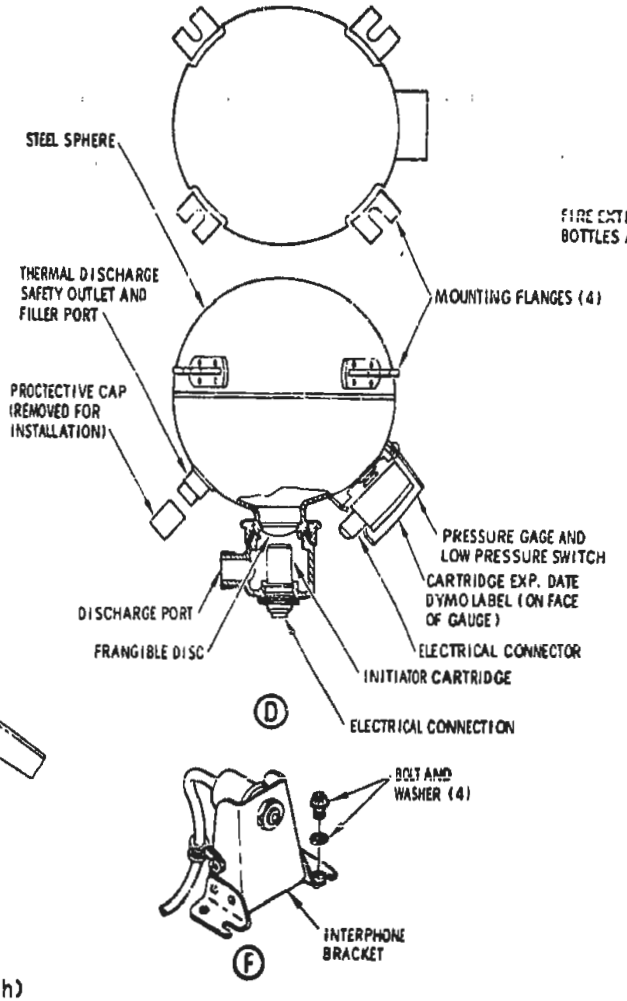
NOTE: On aircraft 001-031 with SB26-018 and 032-033, before installing the discharge head (valve assembly), blow shop air into the outlet port of the drain check valve to dislodge any debris trapped within the valve. Verify that the discharge head and drain check valve are free of any debris or frangible disc chips which would impair the function of the drain check valve (Ref. Fig. 402).

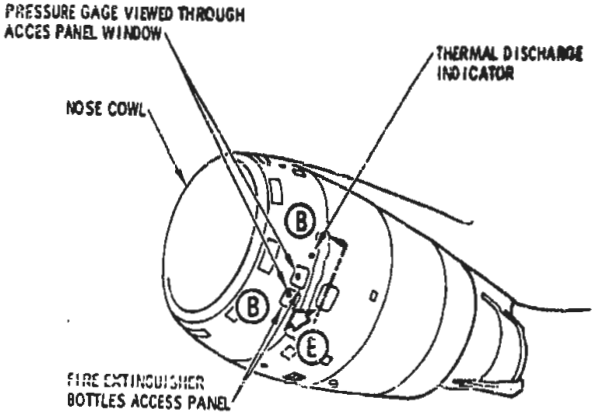
R (4) Attach discharge head to container and tighten R container nut finger-tight (Ref. Fig. 402).

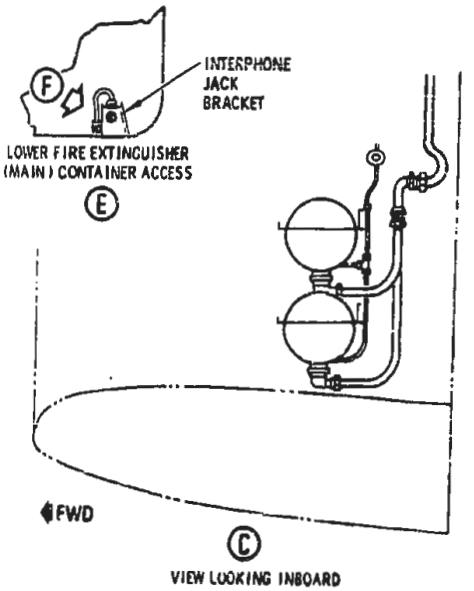
(5) Place container in installed position and install attach bolts and washers.











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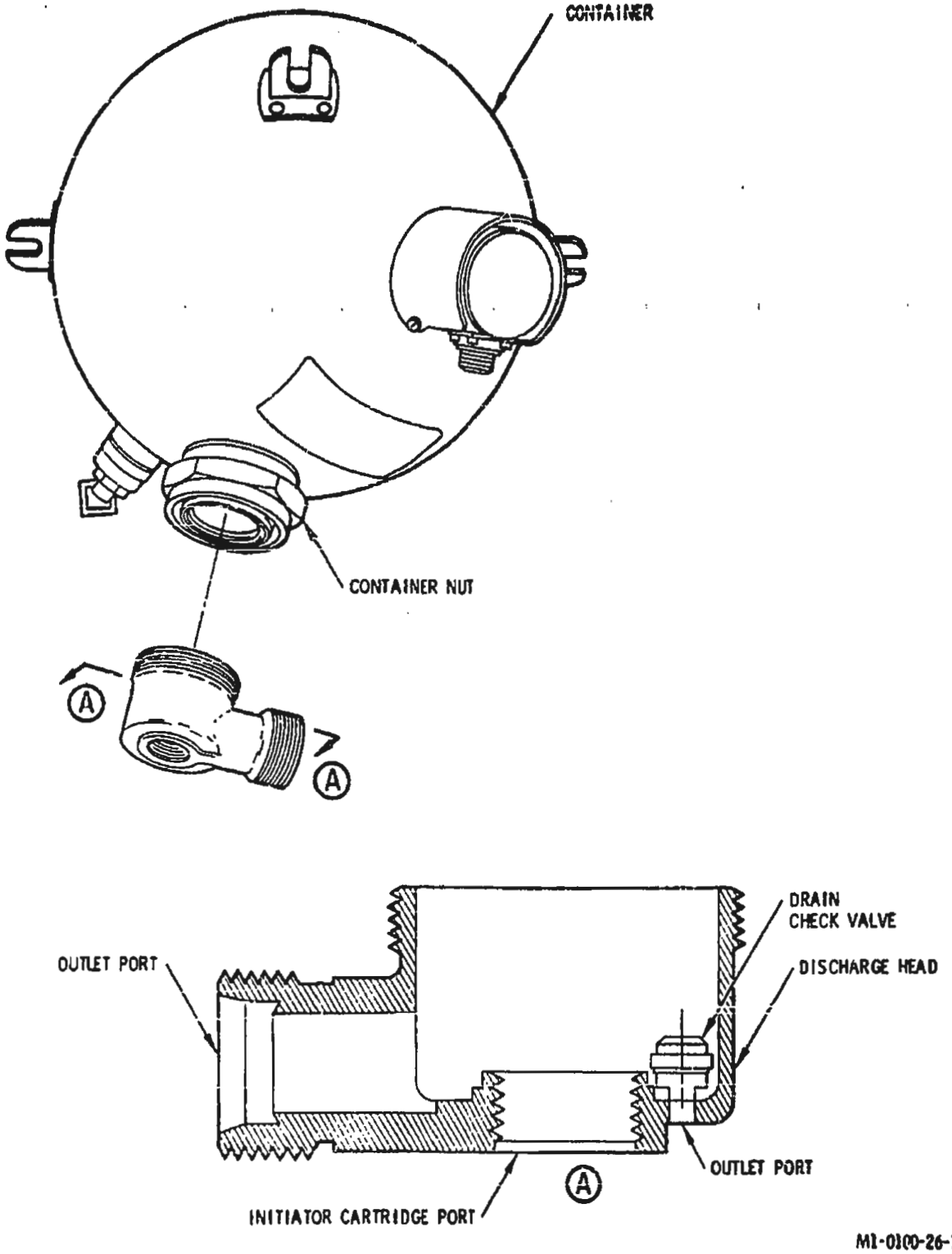
CR Fire Extinguisher Container (224-cubic-inch)
CR Removal and Installation
CR Figure 401

EFFECTIVITY: ALL

001B



C C Fire Extinguisher Container Discharge Head
Figure 402

R R 001B EFFECTIVITY: 001-031 WITH SB26-018 AND 032-033

NOTE: All interface electrical connectors are self-locking. To ensure that the self-locking feature has engaged, hand tighten the plug until the fully coupled indicator line is covered and the threads have bottomed out.

(6) Connect electrical harness plug to pressure switch.

R R (7) Connect thermal discharge tube to thermal discharge port.

C C CAUTION: DO NOT LOOSEN DISCHARGE PORT ON BOTTLE OR LEAKAGE WILL OCCUR. USE TWO WRENCHES.

R (8) Tighten thermal discharge tube nuts at T-fitting and thermal discharge fitting.

C NOTE: Check discharge lines for clearance.

R R (9) Connect discharge tube to discharge head outlet port and tighten nut hand-tight.

R (10) Tighten container 40 to 80 lb ft.

(11) Tighten discharge tube nut.

(12) Perform the following checks:

C C (a) Check cartridge for acceptable date. (Cartridge life is 5 years.)

C (b) Assure cartridge is torqued 150 to 200 lb in.

C C (c) Check connector pins for deformation, damage, or looseness.

C C C C (13) Attach a new cartridge expiration date (EXP X/XX) Dymo label on the bottle gauge. To determine the new expiration date, add 5 years to the month and year of manufacture as stamped on the new cartridge.

(14) Tighten cartridge 150 to 200 lb in.

(15) Verify that there is no voltage between cable connector pins 3 and 4, and between pins 6 and 7 of cartridge harness plug.

(16) Verify that one interface seal is installed in the cartridge, then connect harness plug to cartridge.

NOTE: In order to assure proper electrical connection, the plug must be tightened until the red

C C C indicator line on the cartridge is covered. If no line exists, tighten until the plug covers the shoulder above the threads by .03 inches.

(17) Remove tags and close circuit breakers opened in Step 3A(1).

R (18) Perform extinguisher system BITE Tests/Checks (Ref. 26-21-00 and 26-21-01).

(19) Install interphone jack bracket.

(20) Reinstall access panel removed in Step 3A(2).

EXTINGUISHER CONTAINER (224-CUBIC-INCH) - INSPECTION AND CHECK

1. Referenced Procedure

26-21-01 Extinguisher Container - Removal and Installation

2. Inspection/Check

A. Inspection

C (1) Check that the extinguisher container pressure gages, zone 411 and 421, indicate a pressure of at least 570 psig at 70 degrees F.

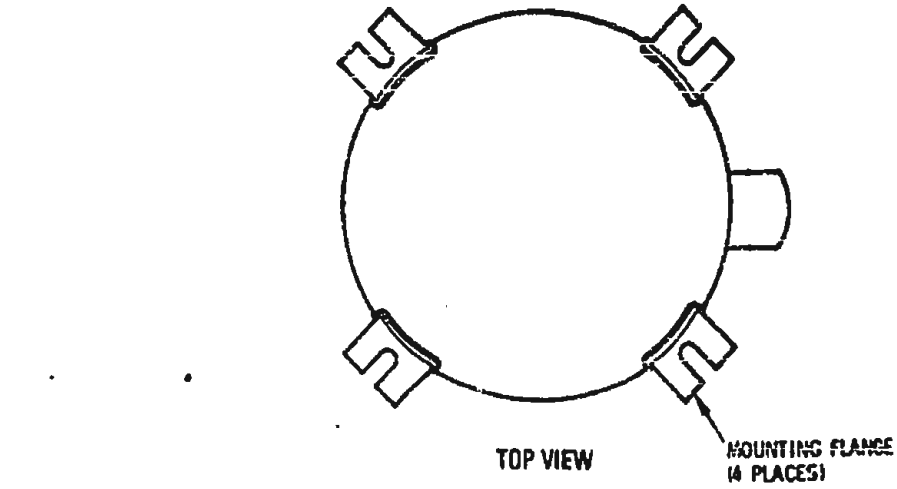
C (2) Replace any extinguisher container that indicates less than 570 psig at 70 degrees F.

B. Weight Check

(1) Remove fire extinsuisher (Ref. 26-21-01).

CR (2) Assure that fire bottle gross weight is not more than 0.5 pound under the minimum gross weight marked on the bottle. For weighing purposes, the fire extinguisher bottle includes the charged container, swivel(s) and a cartridge. All protective caps must be removed for weighing.

(3) Install fire extinguisher (Ref. 26-21-01).



Fire Extinguisher Container (224-cubic-inch)
Figure 601

EXTINGUISHER CONTAINER (630-CUBIC-INCH) - REMOVAL AND INSTALLATION

1. Equipment and Materials

Aluminum foil

Protective caps

2. Referenced Procedure

	26-21-00	Engine/APU Fire Extinguisher System - Adjustment and Test
R R	26-21-02	Extinguisher Container (630-Cubic-Inch) - Inspection and Check

3. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers FIRE EXTINGUISHER - ENG 2 MAIN (C12), ENG 2 ALTN (C13), APU MAIN (C16), and APU ALTN (C17).

(2) Open fire extinguisher container access panel (317BB).

R R R WARNING: THE TWO DISCHARGE HEADS (VALVE ASSEMBLIES) ATTACHED TO EACH EXTINGUISHER CONTAINERS CONTAIN AN ELECTRICALLY ACTIVATED CARTRIDGE TYPE EXPLOSIVE DEVICE. DO NOT CONNECT ANY FORM OF ELECTRICAL POWER TO THE ELECTRICAL CONNECTOR WHEN REMOVING OR INSTALLING THE CONTAINER OR CARTRIDGE.

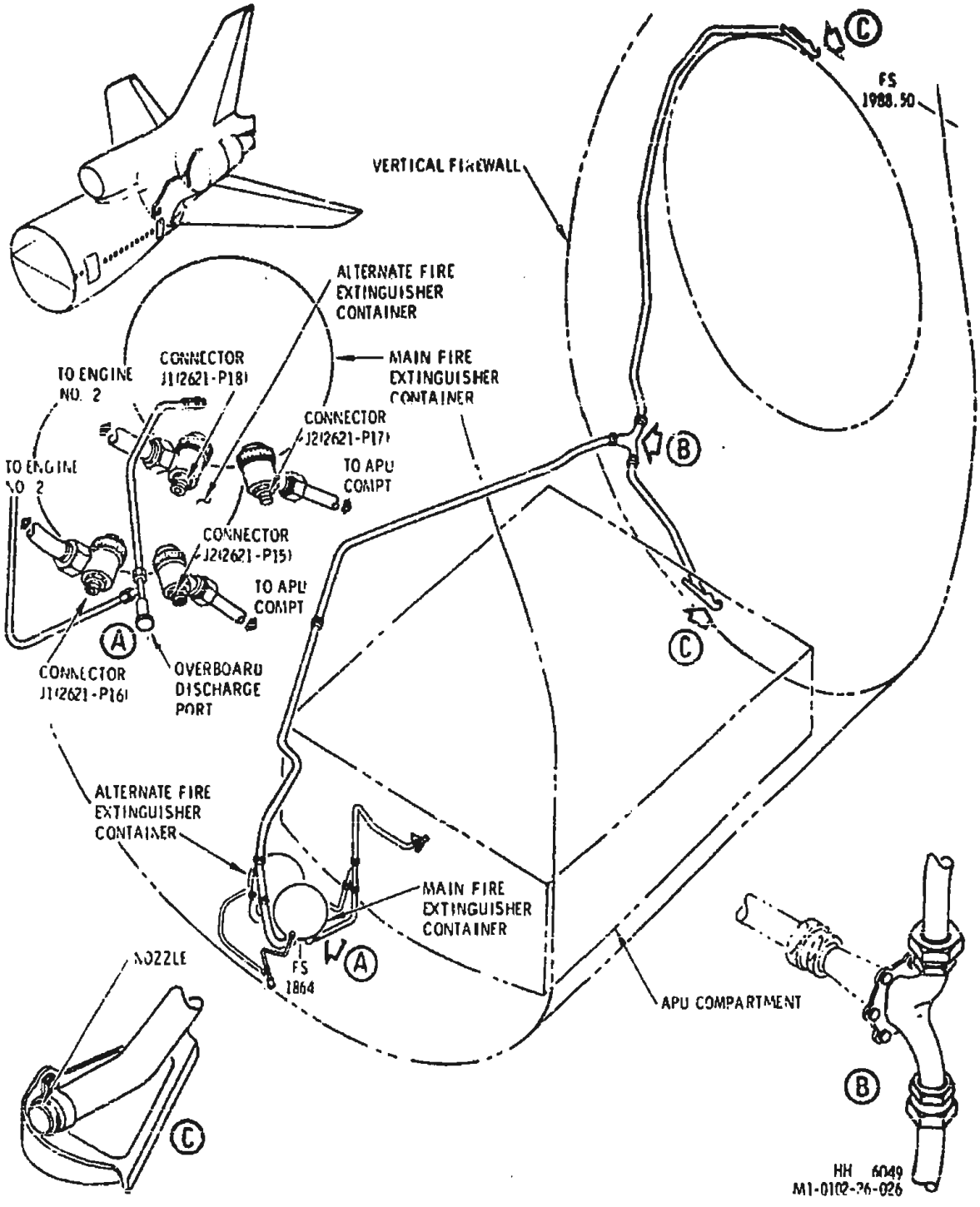
R R (3) Disconnect electrical connectors from both dual wired cartridges (Ref. Fig. 401 and 402).

C (4) Deleted.

(5) Short together all pins of the cartridges with a wad of aluminum foil.

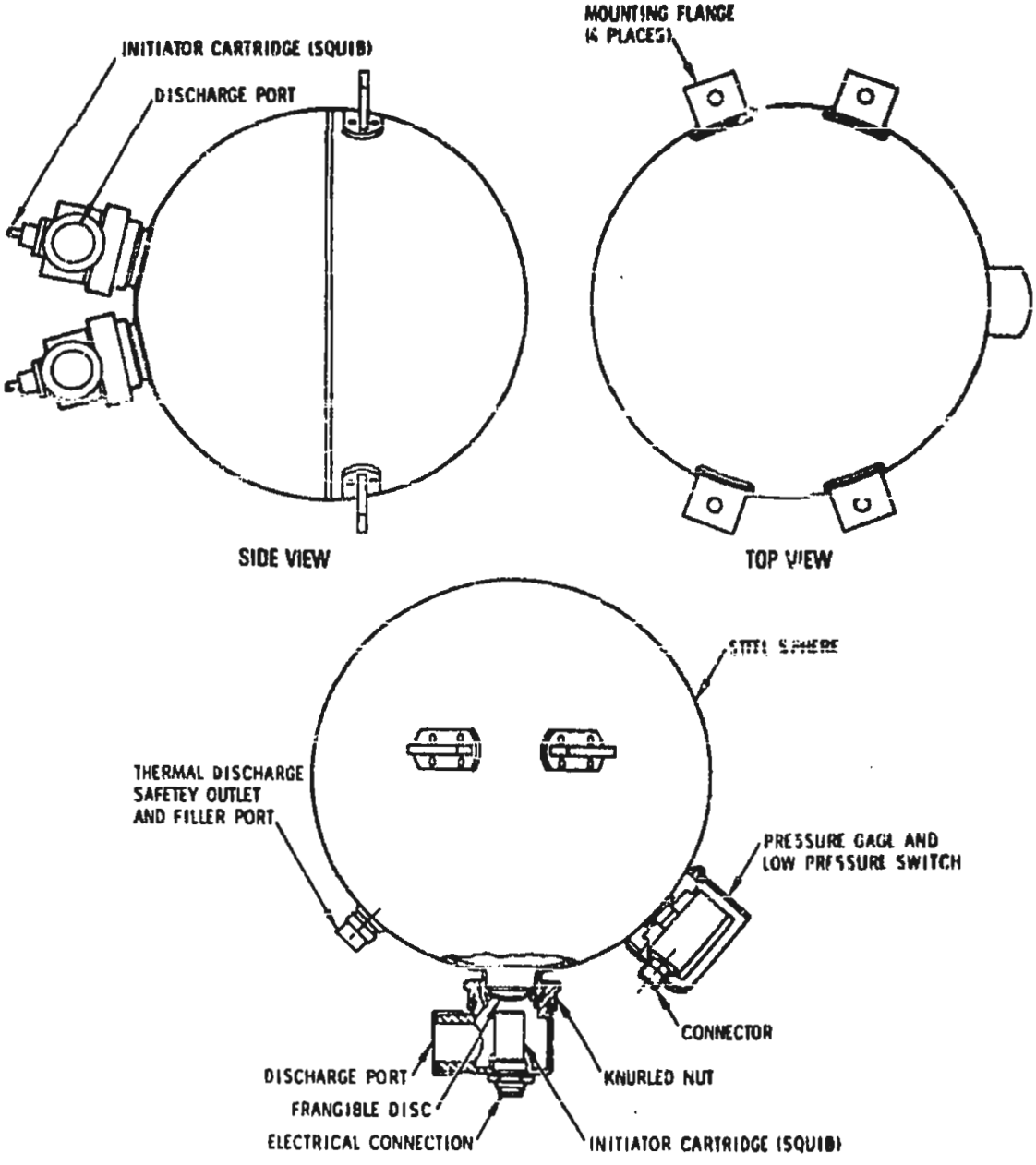
R R (6) Disconnect discharge tubes from discharge heads of container being removed.

R R (7) Loosen container nuts just enough to permit rotation of discharge heads.



R Fire Extinguisher Container (630-cubic-inch)
R Removal and Installation
R Figure 401 (Sheet 1)

EFFECTIVITY: ALL



C
C
C Fire Extinguisher Container (630-cubic-inch)
Removal and Installation
Figure 401 (Sheet 2)

R EFFECTIVITY: ALL
R
050B

(8) Disconnect electrical connector from low pressure switch.

(9) Disconnect thermal discharge line from the container.

(10) Remove container support bracket fasteners and remove container from the aircraft.

WARNING: USE EXTREME CARE WHEN HANDLING CONTAINER WITH EXPOSED FRANGIBLE DIAPHGRAM.

(11) Remove discharge heads.

(12) Install protective cap over thermal discharge port.

(13) Install protective cap over frangible diaphragm.

B. Installation

NOTE: Verify that container to be installed is properly charged (Ref. 26-21-02).

(1) Verify that circuit breakers opened Step 3A(1) are open and tagged.

(2) Remove protective cap from thermal discharge port.

(3) Remove protective cap from each frangible diaphragm.

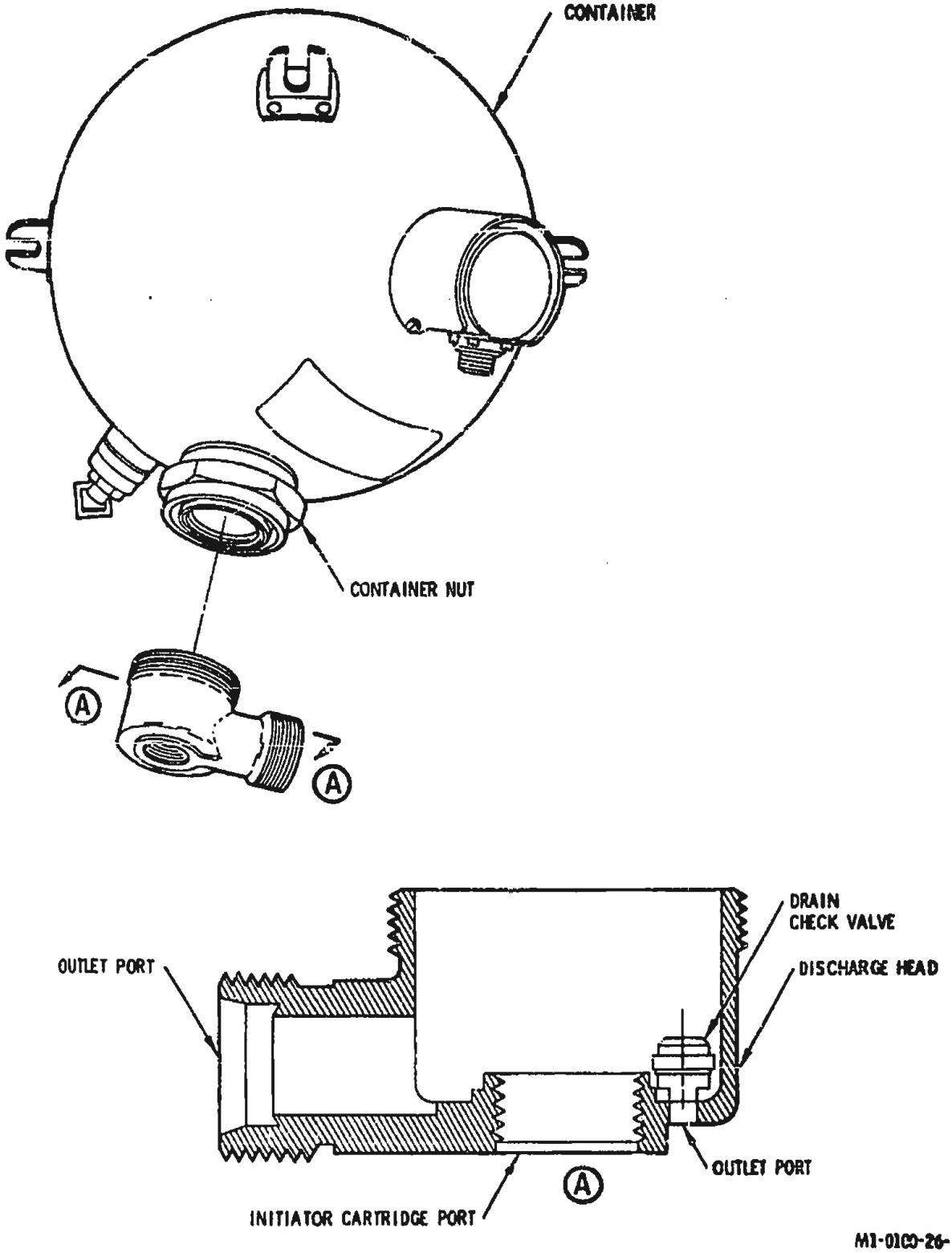
NOTE: Before installing the discharge head (valve assembly), blow shop air into the outlet port of the drain check valve to dislodge any debris trapped within the valve. Verify that the discharge head and drain check valve are free of any debris or frangible disc chips which would impair the function of the drain check valve (Ref. Fig. 402).

(4) Attach discharge heads to container, but do not tighten container nut beyond point that prevents rotatiion of head.

CAUTION: ENSURE EXTINGUISHER LOW PRESSURE SWITCHES FACE EACH OTHER AND ARE LOCATED OVER VIEWPORT.

R (5) Before installing container verify that there is no continuity between pins 1 and 3 of the low pressure switch connector.

(6) Place container in the installed position and secure it to support brackets.



Fire Extinguisher Container Discharge Head
Figure 402

C C CAUTION: DO NOT LOOSEN DISCHARGE PORT ON BOTTLE OR LEAKAGE WILL OCCUR. USE TWO WRENCHES.

(7) Connect thermal discharge line to container.

(8) Connect pressure switch connector.

(9) Loosen discharge tubing at WYE connections (Ref. Fig. 401).

(10) Align discharge heads with discharge tubes and connect tube B-nuts. Tighten tube B-nuts at discharge head and WYE connection hand-tight.

(11) Tighten container nut (Ref. Fig. 402) 40 to 80 lb ft.

(12) Tighten APU discharge tube B-nut at discharge head outlet port 650 to 800 lb in. Tighten Engine No. 2 discharge tube B-nut at discharge head 850 to 1000 lb in. Tighten B-nuts at WYE connector to standard torque value.

(13) Remove all aluminum foil from initiator cartridge. Perform the following:

C C (a) Check cartridge for acceptable date. Cartridge life is 5 years.

C (b) Assure cartridge is torqued 150 to 200 in-lbs.

C C (c) Check connector pins for deformation, damage, or looseness .

CR CR CR C C (14) Attach new cartridge expiration date (EXP X/XX) Dymo label to side of housing right above cartridge so it can be seen from access door. To determine the new expiration date, add 5 years to the month and year of manufacture as stamped on the new cartridge.

C (15) Deleted.

(16) Verify that there is less than one volt between cable connector pins 3 and 4, and between 6 and 7.

CAUTION: CARTRIDGES SHOULD BE CONNECTED ONE AT A TIME FOLLOWED BY A TEST TO CONFIRM THAT THERE IS NO CROSS-CONNECTION (REF. 26-21-00).

C C C (17) Connect cable plug to cartridge. If no line exists, tighten until the plug covers the shoulder above the threads by .03 inches.

NOTE: In order to assure proper electrical connection, the plug must be tightened until the red line on the cartridge is covered.

(18) Close and secure access door opened in Step 3A(2).

(19) Remove tags and close circuit breakers opened in Step 3A(1).

R (20) Test system for circuit continuity and shorts through each initiator cartridge by performing BITE
R Tests/Checks (Ref. 26-21-00 and 26-21-02).

EXTINGUISHER CONTAINER (630-CUBIC-INCH) - INSPECTION AND CHECK

1. Reference Procedure

26-21-02 Extinguisher Container - Removal and Installation

2. Inspection/Check

A. Inspection

C (1) Check that the extinguisher container pressure gages, zone 317, indicate a pressure of at least 570 psig at 70 degrees F (Ref. 601).

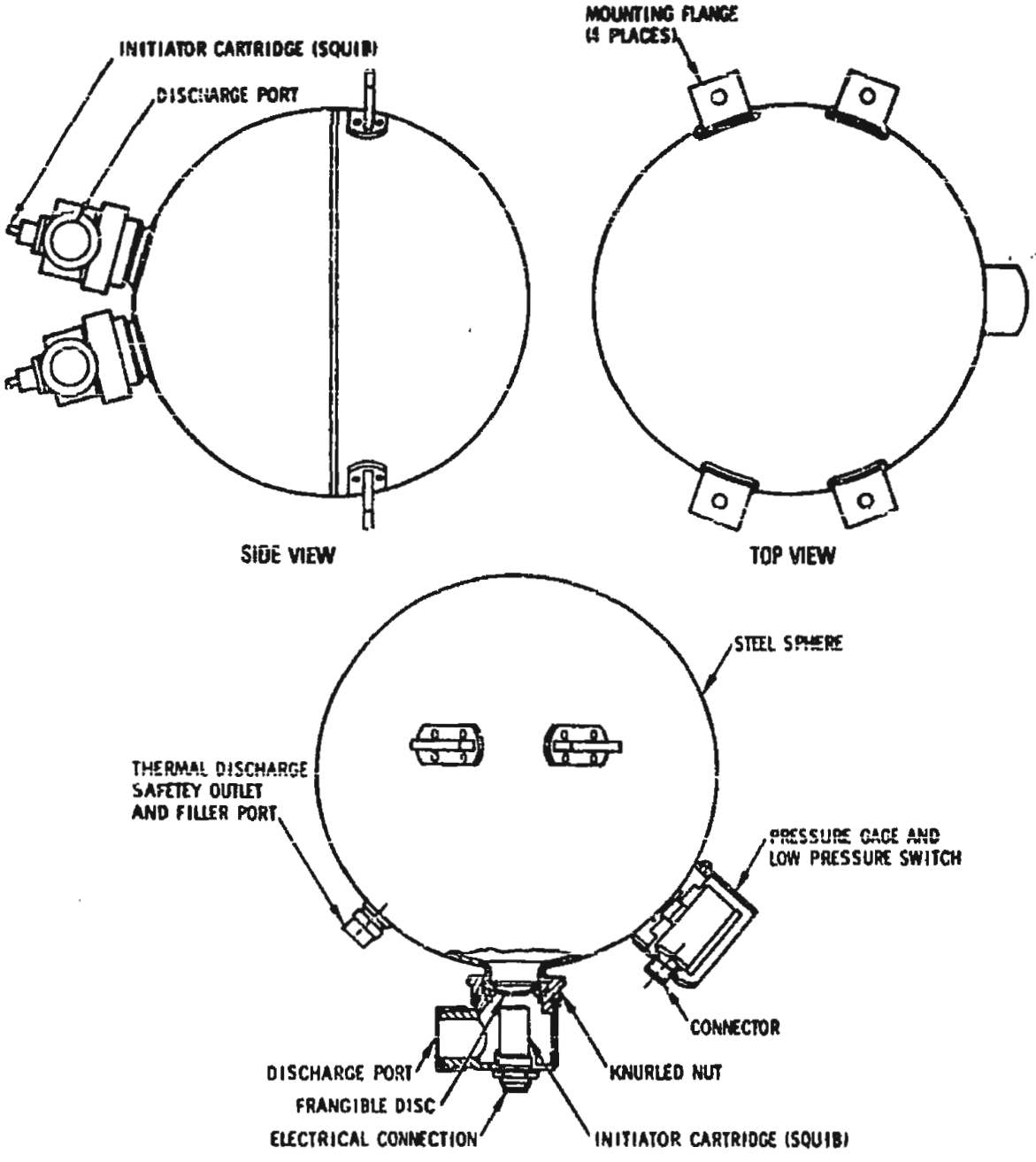
C (2) Replace any extinguisher container that indicates less than 570 psig at 70 degrees F.

B. Weight Check

(1) Remove fire extinguisher container (Ref. 26-21-00).

CR (2) Assure that fire bottle gross weight is not more than 1.0 pound under the minimum gross weight marked on the bottle. For weighing purposes, the fire extinguisher bottle includes the charged container, swivel(s) and a cartridge. All protective caps must be removed for weighing.

(3) Install fire extinguisher container (Ref. 26-21-02).



Fire Extinguisher Container (630-cubic-inch)
Figure 601

R THERMAL DISCHARGE INDICATOR - MAINTENANCE PRACTICES

R 1. General

R This procedure verifies the integrity of a system with discharge
R indicator ruptured or missing.

R 2. Referenced Procedures

R 26-21-01 Extinguisher Container (224-Cubic-Inch) - Removal
R and Installation

R 26-21-02 Extinguisher Container (630-Cubic-Inch) - Removal
R and Installation

R 3. Verification of Discharge Diaphragm Integrity

R A. Verification

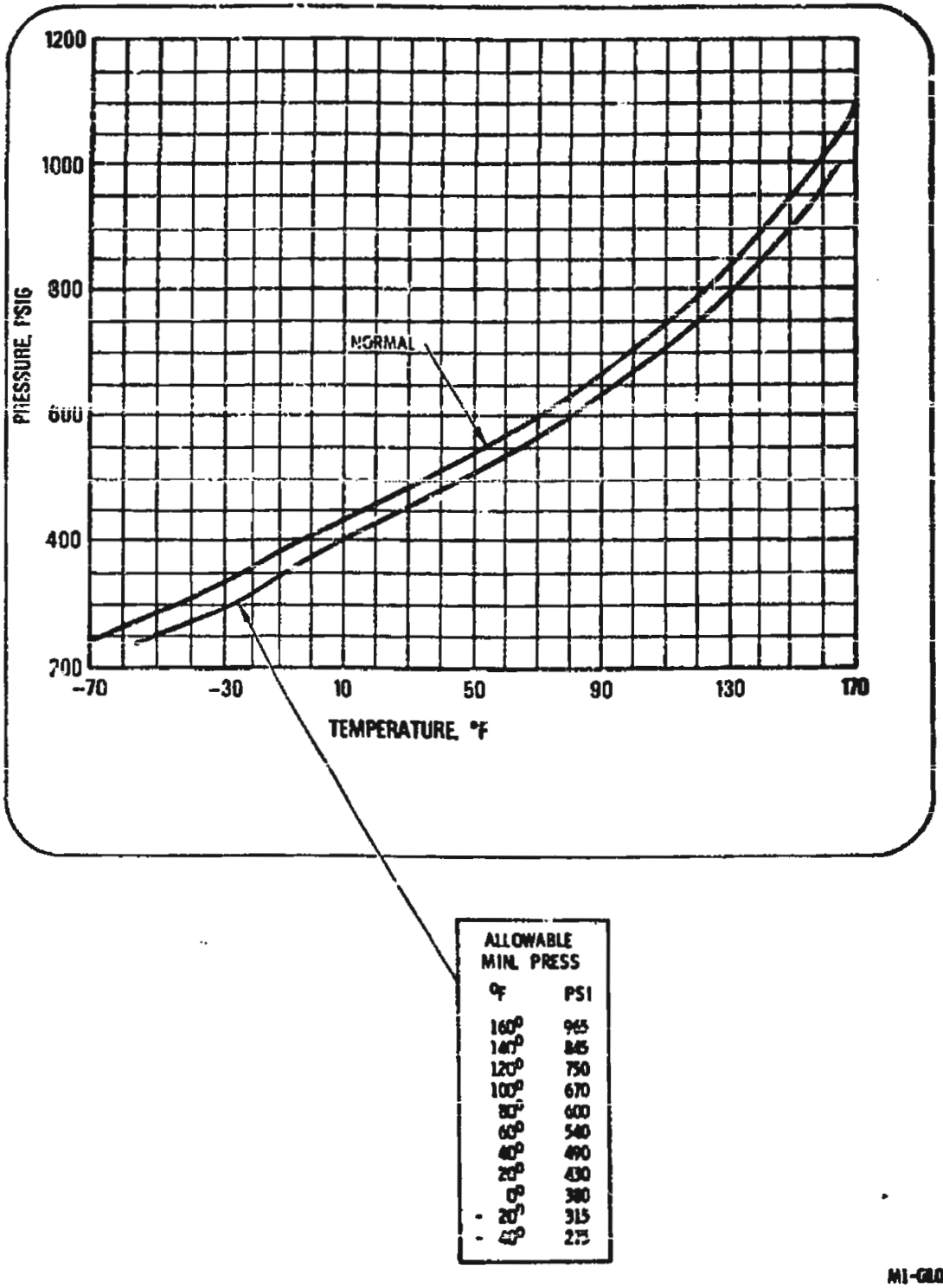
R (1) Open applicable fire extinguisher container access
R panel 411SL, 411TL, 421SL, or 421TL for engines No. 1
R or No. 3 or panel 316 CB for engine No. 2.

R (2) Visually check container pressure gage to verify that
R container pressure is as depicted on Container
R Pressure/Temperature Chart (Ref. Fig. 201), or remove
R and weigh container to verify that weight is within
R ±0.2 pound of weight registered on container nameplate,
R then reinstall container (Ref. 26-21-01 or 26-21-02).

R (3) Close access panel opened in Step (1).

R (4) Install placard in flight station identifying missing
R thermal discharge indicator.

R (5) Make appropriate entry in aircraft log book.



MI-GLOB-26-038

R Fire Extinguisher Container Pressure/Temperature Chart
R Figure 201

THERMAL DISCHARGE INDICATOR - REMOVAL AND INSTALLATION

1. General

Removal and installation procedures are the same for all thermal discharge indicators.

2. Removal/Installation

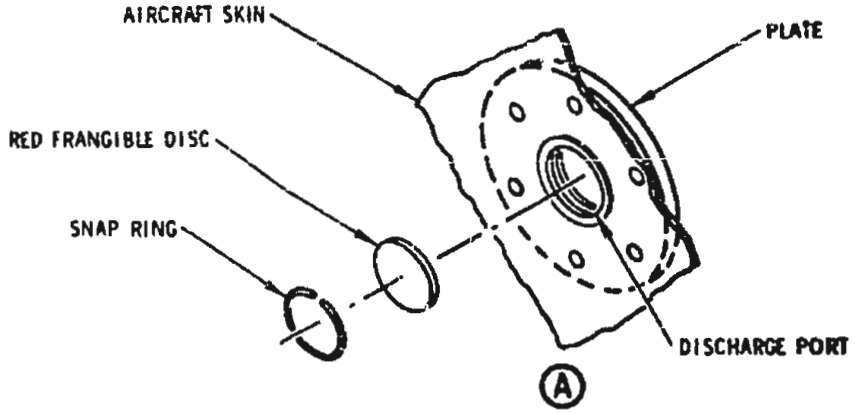
A. Removal

(1) Remove snap ring (Ref. Fig. 401).

(2) Remove broken disc particles.

B. Installation

(1) Insert red frangible disc into discharge port and install snap ring.



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Thermal Discharge Indicator - Removal and Installation
Figure 401

THERMAL DISCHARGE INDICATOR - INSPECTION AND CHECK

1. General

Inspection and check procedures are the same for all indicators.

2. Referenced Procedures

26-21-01	Extinguisher Container (224-cubic-inch) - Inspection and Check
26-21-02	Extinguisher Container (630-cubic-inch) - Inspection and Check
26-21-03	Thermal Discharge Indicator - Removal and Installation

3. Inspection/Check

A. Inspection

(1) Visually check that the thermal discharge indicator discs in the No. 1 and 3 engine nose cowls and lower afterbody surface are intact.

(2) Replace frangible disc, if ruptured (Ref. 26-21-03).

R (3) Visually check that related container has sufficient pressure (Ref. 26-21-01 and 26-21-02).

DUAL-WIRED INITIATOR CARTRIDGE - REMOVAL AND INSTALLATION

1. Equipment and Materials

Aluminum foil

2. Referenced Procedure

26-21-00 Fire Extinguisher System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag FIRE EXTINGUISHER circuit breakers ENG 2 MAIN, ENG 2 ALTN, APU MAIN, and APU ALTN.

(2) Open access door (horizontal stabilizer actuators, internal area), zone 317.

WARNING: THE CARTRIDGE IS AN ELECTRICALLY ACTUATED EXPLOSIVE DEVICE. DO NOT CONNECT ANY ELECTRICAL POWER TO THE ELECTRICAL CONNECTOR OR CARTRIDGE WHEN REMOVING OR INSTALLING.

(3) Disconnect electrical connector from the cartridge (Ref. Fig. 401).

CR (4) Unscrew cartridge from its valve assembly.

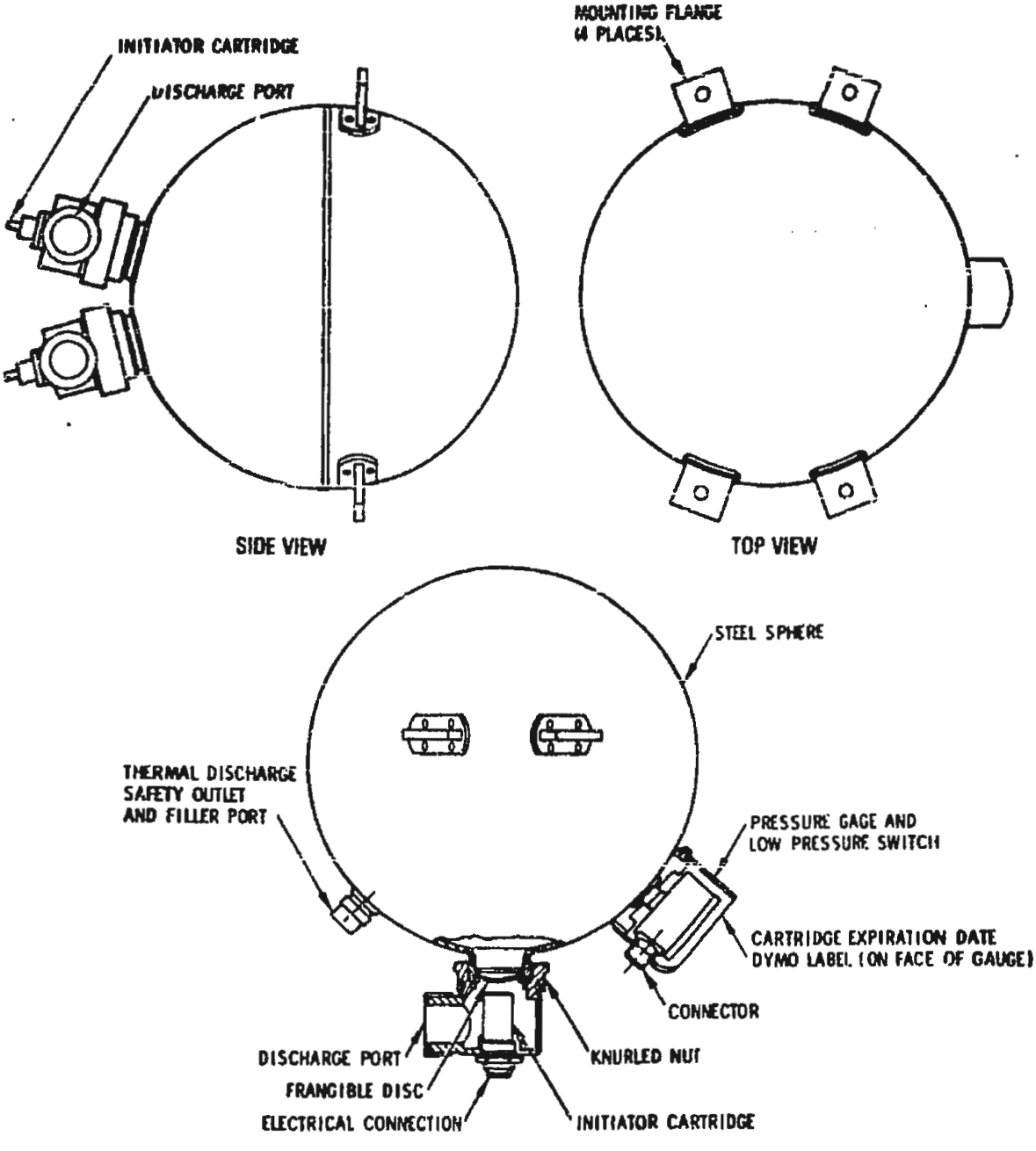
(5) Short together all pins of the cartridge with a wad of aluminum foil.

WARNING: IF CARTRIDGE IS TO BE REPLACED, KEEP THE CARTRIDGE DRY, PREFERABLY IN THE BAG IN WHICH THE NEW CARTRIDGE WAS PACKAGED. STORE THE REPLACED CARTRIDGE IN ACCORDANCE WITH ICC RULES FOR CLASS C EXPLOSIVES.

B. Installation

(1) Verify that circuit breakers opened in Step 3A(1) are open and tagged.

(2) Remove aluminum foil from initiator cartridge. Perform the following:



M1-0000-26-1080

CR CR Initiator Cartridge - Removal and Installation
Figure 401

C (a) Check manufacture date or cartridge. Determine
C new expiration date by adding 5 years to the year
C of manufacture. Make dymo label of the form (exp
C X/XX)

CR Example: Manufacture Date ---------- 2-85

C Cartridge Life ---------- 5 years

CR Placard Reads: EXP 2-90

C ("EXP" must be placed before the

C date on the placard)

(b) Check all crimped areas on cartridge to determine that crimped parts are secure and do not rotate.

(c) Check surfaces and threads for distortion and damage.

(d) Check connector pins for deformation, damage, or looseness.

(3) Install initiator cartridge in the valve assembly.

(4) Torque cartridge 150 to 200 lb in.

C (5) On engines 1 and 3; attach a new cartridge expiration
CR date (EXP X/XX) Dymo label on the bottle gauge. on the
C bottle gauge. On engine No. 2 and APU attach Dymo
C label to side of housing right above cartridge so it
C can be seen from access door.

C (5A) Verify that there is no voltage between cable connector pins 3 and 4, and between pins 6 and 7.

(6) Verify that one interfacial seal is installed in the cartridge electrical connector, then connect cable plug to cartridge.

NOTE: In order to assure proper electrical connection, the plug must be tightened until the red indicator line on the cartridge is covered.

Cartridges for the 630-cubic-inch container should be connected one at a time followed by a test to confirm that there is no cross-connection (Ref. 26-21-00).

(7) Close and secure access door opened in Step 3A(2).

(8) Remove tags and close circuit breakers opened in Step 3A(1).

(9) After completing installation of initiator cartridges on 630-cubic-inch containers, test system for circuit continuity and shorts through each initiator cartridge (Ref. 26-21-00).

FIRE EXTINGUISHER DISCHARGE INDICATOR LIGHT SYSTEM MAINTENANCE PRACTICES

1. General

This procedure verifies that engine 1, 2 and 3 main and alternate fire extinguisher containers are pressurized normally with inoperative FIRE PULL MAIN or ALTN discharge indicator light.

No. 2 engine and the APU share the same main and alternate fire extinguisher containers. This design will permit the No. 2 engine MAIN or ALTN discharge indicator light to verify fire extinguisher container pressure in the event an APU MAIN or ALTN discharge indicator light is inoperative, and vice versa.

This procedure also outlines the steps required to prevent APU Operation in the event the APU MAIN and ALTN discharge indicator lights are inoperative.

2. Referenced Procedures

24-41-00	External Power/Ground Service System - Description and Operation
26-21-00	Engine/APU Fire Extinguisher System - Description and Operation
26-21-01	Extinguisher Container (224 - Cubic Inch) - Removal and Installation
26-21-02	Extinguisher Container (630 - Cubic Inch) - Removal and Installation
26-21-06	Fire Extinguisher Bottle Discharge Indicators - Maintenance Practices

R 3. Maintenance Procedures

R NOTE: This deactivation procedure applies only when an aircraft
R is to be dispatched in accordance with the MEL.

R A. Verification of Engine 1, 2 and 3 Main or Alternate Fire
R Extinguisher Container Discharge Diaphragm Integrity.

R NOTE: Engine No. 2 and the APU share the same main and
R alternate fire extinguisher containers. An
R operational APU MAIN or ALTN fire extinguisher
R discharge indicator may be used to verify engine No.
R 2 main or alternate container pressure in lieu of the
R procedure outlined in the following Step A.
R Installation of a placard in the flight station and
R an appropriate entry in the airplane log book are
R required.

R (1) For engines No. 1 and 3, open applicable fire
R extinguisher container access panel (411SL and 411TL,
R 421SL and 421TL). For engine No. 2, open fire
R extinguisher container access panel 316CB.

R On RB211-22B Engines:

R (2) Compare the main or alternate container pressure gauge
R readout with the minimums shown on Figure 201, Fire
R Extinguisher Container Pressure/Temperature Chart.

R (3) If Step (2) above cannot be accomplished, verify the
R pressure by removing the container from the airplane
R and weighing, reference MM 26-21-01 and MM 26-21-02.

R (4) The container weight should be within ±0.2 pound of the
R charged weight registered on the container nameplate.

R (5) If the container weight is within limits, reinstall in
R the airplane. If the container weight is out of
R limits, replace with a valid container, reference MM
R 26-21-01 or MM 26-21-02.

R On RB211-524B4 Engines:

R (1) Remove electrical connector from the main or alternate
R fire extinguisher container.

R (2) On early model containers, verify extinguisher
R container pressure by checking for continuity between
R pins 1 and 3 in the connector while simultaneously
R pressing the TEST switch on the Low Pressure Switch
R Housing. On later models, the TEST switch is replaced
R with a hex socket. The hex socket when rotated using
R an Allen Wrench will self-return when released if the
R container pressure exceeds 450 PSIG.

R (3) On early models with the TEST switch - if continuity
R between pins 1 and 3 exists when the TEST switch is
R released, replace the container.

R (4) Reposition the electrical connector on the main or
R alternate fire extinguisher container and secure.

R (5) All engines - close and secure the fire extinguisher
R container access panels opened in Step (1).

R (6) Install a placard in the flight station which
R identifies the inoperative fire extinguisher discharge
R indicator.

R (7) Make appropriate entry in the aircraft log book.

R B. Verification of APU Main or Alternate Fire Extinguisher
R Container Discharge Diaphragm integrity.

R (1) Engine No. 2 and the APU share the same main and
R alternate fire extinguisher container. Verification of
R container pressure in the event an APU main or
R alternate fire extinguisher discharge indicator is
R inoperative may be accomplished using an operational
R Engine No. 2 main or alternate fire extinguisher
R discharge indicator.

R (2) Install a placard near the APU FIRE PULL handle on the
R FE/SO upper panel which identifies the inoperative fire
R extinguisher discharge indicator.

R (3) Make appropriate entry in the aircraft log book.

R C. APU Deactivation Procedure with Inoperative MAIN and ALTN
R Fire Extinguisher Discharge Indicators.

R NOTE: Paragraph B of this procedure is concerned with an
R inoperative APU MAIN or ALTN fire extinguisher
R indicator. This procedure, Paragraph C, is concerned
R with an inoperative APU MAIN and ALTN fire
R extinguisher indicator. Under these circumstances,
R the APU is rendered inoperative.

R (1) On the FE/SO Aft Circuit Breaker Panel CB3, open and
R tag the following circuit breakers:

R APU POWER-BAT PWR (B10)

R APU POWER-CONTROLLER-BUS 2 (B13)

R APU POWER-CONTROLLER-GND BUS (B14)

R APU POWER-CONTROL & PRI F/W SOV-GND BUS (B15)

R (2) Verify that the BLEED AIR S/O switchlight on the FE/SO
R APU Control Panel is unlatched (out) and the OPEN
R legend is off.

R NOTE: Location of the APU BLEED AIR VALVE circuit
R breaker, reference Step C, will vary depending
R on airplane model designation.

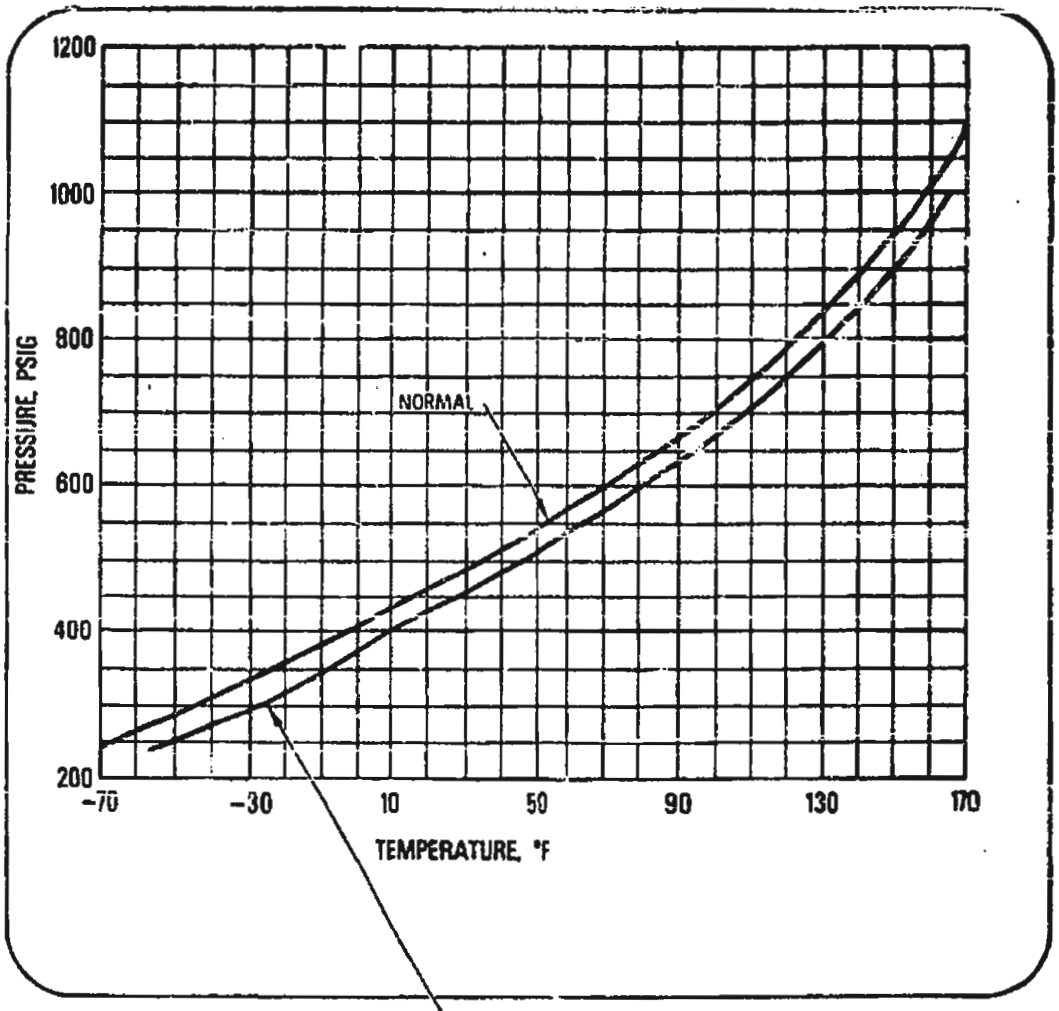
R (3) On Pilots Overhead Circuit Breaker Panel CB1, open and
R tag circuit breaker APU BLEED AIR VALVE H13

R OR

R On FE/SO Aft Circuit Breaker Panel CB3, open and tag
R circuit breaker APU BLEED AIR VALVE S18.

R (4) Install appropriate APU INOPERATIVE and APU BLEED AIR
R SHUTOFF VALVE SECURED CLOSED placards in the flight
R station at a location clearly visible to the flight
R crew.

R E. Make appropriate entry in the aircraft log book.



ALLOWABLE MIN. PRESS	
°F	PSI
160°	965
140°	845
120°	750
100°	670
80°	600
60°	540
40°	490
20°	420
0°	380
- 20°	315
- 40°	275

M1-0101-26-008

R Fire Extinguisher Container Pressure/Temperature Chart
R Figure 201

R EFFECTIVITY: ALL
R
0015

FIRE EXTINGUISHER SHORT TEST SYSTEM - MAINTENANCE PRACTICES

1. General

R This procedure verifies the distribution of 28 volts DC to the
R main or alternate engine/APU fire extinguisher dual-wired
R initiator cartridge (squib) in the event the associated FIRE
R EXTINGUISHER TEST - SHORT TEST is inoperative. The procedure
R also contains instructions for rendering the APU inoperative
R when the MAIN and ALTN SHORT TEST systems are inoperative.

R Note that paragraphs 3 through 6 contain verification procedures
R for the MAIN and ALTN SHORT TEST System. Perform only those
R steps within each procedure that relate to the faulted SHORT
R TEST system, i.e., if MAIN SHORT TEST is faulted, only perform
R the steps applicable to the MAIN system within the procedure.

R 2. Referenced Procedures

R 24-41-00 External Power/Ground Service System - Maintenance
R Practices

R 26-21-00 Engine/APU Fire Extinguishing System - Adjustment
R and Test

R 3. No. 1 Engine Fire Extinguishing System Integrity Verification

R NOTE: Establish communications between personnel in the flight
R station and on engine No. 1.

R A. Open and tag the following circuit breakers:

R (1) Pilot's Overhead Circuit Breaker Panel, CB1, Zone 210:

R FUEL SHUTOFF VALVE-TANK-ENG 1(D10)

R ENGINE BLEED CONTROL-ENG ISLN VALVES-ENG 1 (G10)

R FIRE DETECTION - MASTER ALARM PWR- ENG 1 (J1)

R FIRE DETECTION - FIREBELL PWR (J6)

R GEN CONTROL UNITS - GEN 1 (K15)

R HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS A (L15)

R HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS B (L16)

R (2) FE/SO Aft Circuit Breaker Panel, CB3, Zone 215:

R ENG 1-ACCESS VENT AIR (N1)

R ENG 1-TANK VALVE (T6)

R ENG 1-EMER & L X FEED (T7)

R B. Open Engine 1 access panel 411SL and 411TL.

R C. Locate the dual-wired initiator cartridge (squib) on the
R main extinguisher container.

R D. Remove main extinguisher initiator cartridge plug P704.

R E. Locate the dual-wired initiator cartridge (squib) on the
R alternate extinguisher container.

R F. Remove alternate extinguisher initiator cartridge plug P702.

R G. Turn on electrical power, reference Maintenance Manual
R 24-41-00.

R H. On the Pilots Overhead Panel, Zone 210, pull the Engine No.
R 1 FIRE PULL handle to expose the Fire EXtinguisher Discharge
R Switch.

R I. Actuate and hold the Fire Extinguisher Discharge Switch to
R the MAIN DISCH (right) position.

R J. Measure 28V DC between main extinguisher initiator cartridge
R (squib) plug P704, pins 4 and 3 (ground) and pins 7 and 6
R (ground).

R K. Release the Fire Extinguisher Discharge Switch. Confirm
R that the switch returns to the center-off position and zero
R volts is reflected between the pins specified in Step J.

R L. Actuate and hold the Fire Extinguisher Discharge Switch to
R the ALTN DISCH (left) position.

R M. Measure 28V DC between alternate extinguisher initiator
R cartridge (squib) plug P702, pins 4 and 3 (ground) and pins
R 7 and 6 (ground).

R N. Release the Fire Extinguisher Discharge Switch. Confirm
R that the switch returns to the center-off position and zero
R volts is reflected between the pins specified in Step M.

R O. Push in the Engine No. 1 FIRE PULL handle. Confirm that
R spring-loaded guard covers handle.

R P. Reconnect and secure main extinguisher initiator cartridge
R plug P704 and alternate extinguisher initiator cartridge
R plug P702.

R Q. Close and secure the fire extinguisher container access
R panels opened in Step B.

R R. Close circuit breakers previously opened in Steps A(1) and
R (2).

R S. On the FE/SO FIRE EXTINGUISHER TEST panel, placard ENG 1
R MAIN or ALTN SHORT TEST INOPERATIVE.

R T. Make appropriate entry in aircraft log book.

R 4. No. 2 Engine Fire Extinguishing System Integrity Verification

R NOTE: Establish communications between personnel in the flight
R station and on engine No. 2.

R A. Open and tag the following circuit breakers:

R (1) Pilot's Overhead Circuit Breaker Panel, CB1, Zone 210:

R FUEL SHUTOFF VALVE-TANK-ENG 2 (D11)

R FUEL SHUTOFF VALVE-TANK-PRI EMER-2 (D14)

R ENGINE BLEED CONTROL-ENG ISLN VALVES-ENG (G11)

R FIRE DETECTION - MASTER ALARM PWR - ENG 2 (J2)

R FIRE DETECTION - FIREBELL PWR (J6)

R GEN CONTROL UNITS - GEN 2 (K16)

R HYD - PUMP & FIREWALL SHUTOFF VALVE CONT - SYS B (L16)

R HYD - PUMP & FIREWALL SHUTOFF VALVE CONT _ SYS C (L17)

R (2) FE/SO Aft Circuit Breaker Panel, CB3, Zone 215:

R ENG 2-ACCESS AIR VENT (N7)

R INSTR & CONTROLS-ALL ENGINES-ENG 2-PRI EMER (R18)

R ENG 2-TANK (T9)

R ENG 2-SEC EMER CX FEED (T10)

R B. Open Engine 2 access panel 316CB.

R C. Locate the dual-wired initiator cartridge (squib) on the
R main extinguisher container.

R D. Remove main extinguisher initiator cartridge plug P18.

R E. Locate the dual-wired initiator cartridge (squib) on the
R alternate extinguisher container.

R F. Remove alternate extinguisher initiator cartridge plug P16.

R G. Turn on electrical power, reference Maintenance Manual
R 24-41-00.

R H. On the Pilots Overhead Panel, Zone 210, pull the Engine No.
R 2 FIRE PULL handle to expose the Fire Extinguisher Discharge
R Switch.

R I. Actuate and hold the Fire Extinguisher Discharge Switch to
R the MAIN DISCH (right) position.

R J. Measure 28V DC between main extinguisher initiator cartridge
R (squib) plug P18, pins 3 and 4 (ground) and pins 6 and 7
R (ground).

R K. Release the Fire Extinguisher Discharge Switch. Confirm
R that the switch returns to the center-off position and zero
R volts is reflected between the pins specified in Step J.

R L. Actuate and hold the Fire Extinguisher Discharge Switch to
R the ALTN DISCH (left) position.

R M. Measure 28V DC between alternate extinguisher initiator
R cartridge (squib) plug P16, pins 3 and 4 (ground) and pins 6
R and 7 (ground).

R N. Release the Fire Extinguisher Discharge Switch. Confirm
R that the switch returns to the center-off position and zero
R volts is reflected between the pins specified in Step M.

R O. Push in the Engine No. 2 FIRE PULL handle. Confirm that
R spring-loaded guard covers handle.

R P. Reconnect and secure main extinguisher initiator cartridge
R plug P18 and alternate extinguisher initiator cartridge plug
R P16.

R Q. Close and secure the fire extinguisher container access
R panels opened in Step B.

R R. Close circuit breakers previously opened in Steps A(1) and
R (2).

R S. On the FE/SO FIRE EXTINGUISHER TEST panel, placard ENG 2
R MAIN or ALTN SHORT TEST INOPERATIVE.

R T. Make appropriate entry in aircraft log book.

R 5. No. 3 Engine Fire Extinguishing System Integrity Verification

R NOTE: Establish communications between personnel in the flight
R station and on engine No. 3.

R A. Open and tag the following circuit breakers:

R (1) Pilot's Overhead Circuit Breaker Panel, CB1, Zone 210:

R FUEL SHUTOFF VALVE-TANK-ENG 3 (D12)

R ENGINE BLEED CONTROL-ENG ISLN VALVES-ENG 3 (G12)

R FIRE DETECTION-MASTER ALARM PWR-ENG 3 (J3)

R FIRE DETECTION-FIREBELL PWR (J6)

R GEN CONTROL Units-GEN 3 (K17)

R HYD-PUMP & FIREWALL SHUTOFF VALVE CONT-SYS B (L16)

R HYD-PUMP & FIREWALL SHUTOFF VALVE CONT-SYS D (L18)

R (2) FE/SO Aft Circuit Breaker Panel, CB3, Zone 215:

R ENG 3-ACCESS VENT AIR (N13)

R ENG 3-TANK VALVE (T2)

R ENG 3-EMER & R X FEED (T13)

R B. Open Engine 3 access panel 421SL and 421TL.

R C. Locate the dual-wired initiator cartridge (squib) on the
R main extinguisher container.

R D. Remove main extinguisher initiator cartridge plug P704.

R E. Locate the dual-wired initiator cartridge (squib) on the
R alternate extinguisher container.

R F. Remove alternate extinguisher initiator cartridge plug P702.

R G. Turn on electrical power, reference Maintenance Manual
R 24-41-00.

R H. On the Pilots Overhead Panel, Zone 210, pull the Engine No. 3 FIRE PULL handle to expose the Fire Extinguisher Discharge Switch.

R I. Actuate and hold the Fire Extinguisher Discharge Switch to the MAIN DISCH (right) position.

R J. Measure 28V DC between main extinguisher initiator cartridge (squib) plug P704, pins 4 and 3 (ground and pins 7 and 6 (ground).

R K. Release the Fire Extinguisher Discharge Switch. Confirm that the switch returns to the center-off position and zero volts is reflected between the pins specified in Step J.

R L. Actuate and hold the Fire Extinguisher Discharge Switch to the ALTN DISCH (left) position.

R M. Measure 28V DC between alternate extinguisher initiator cartridge (squib) plug P702, pins 4 and 3 (ground) and pins 7 and 6 (ground).

R N. Release the Fire Extinguisher Discharge Switch. Confirm that the switch returns to the center-off position and zero volts is reflected between the pins specified in Step M.

R O. Push in the Engine No. 3 FIRE PULL handle. Confirm that spring-loaded guard covers handle.

R P. Reconnect and secure main extinguisher initiator cartridge plug P704 and alternate extinguisher initiator cartridge plug P702.

R Q. Close and secure the fire extinguisher container access panels opened in Step B.

R R. Close circuit breakers previously opened in Steps A(1) and (2).

R S. On the FE/SO FIRE EXTINGUISHER TEST panel, placard ENG 3 MAIN or ALTN SHORT TEST INOPERATIVE.

R T. Make appropriate entry in aircraft log book.

R 6. APU Fire Extinguishing System Integrity Verification

R NOTE: Establish communications between personnel in the flight station and on engine No. 2.

R A. Open and tag the following circuit breakers:

R (1) Pilot's Overhead Circuit Breaker Panel, CB1, Zone 210:

R FIRE EXTINGUISHER-APU FIRE SHUTDOWN (C18)

R FUEL SHUTOFF VALVE-PRI EMER-APU (D15)

R APU FIRE DETECT-MASTER ALARM PWR (D18)

R FIRE DETECTION-MASTER ALARM PWR-WHL WELL APU (J4)

R FIRE DETECTION-FIREBELL PWR (J6)

R FIRE DETECTION-APU FIRE SHUTDOWN (J7)

R FIRE DETECTION-APU SEC EMER SHUTOFF (J8)

R (2) FE/SO Aft Circuit Breaker Panel, CB3, Zone 215:

R APU POWER-APU GEN CONT UNIT (B17)

R APU BAT BUS-FIREWALL SHUTOFF-PRIM (S7)

R APU BAT BUS-FIREWALL SHUTOFF-SEC (S8)

R ESS BUS-APU BLEED AIR VALVE (S18)

R B. Open Engine 2 access panel 316CB.

R NOTE: Engine No. 2 and the APU share the same main and
R alternate fire extinguisher containers.

R C. Locate the dual-wired initiator cartridge (squib) on the
R main extinguisher container.

R D. Remove main extinguisher initiator cartridge plug P17.

R E. Locate the dual-wired initiator cartridge (squib) on the
R alternate extinguisher container.

R F. Remove alternate extinguisher initiator cartridge plug P15.

R G. Turn on electrical power, reference Maintenance Manual
R 24-41-00.

R H. On the FE/SO upper panel, pull the APU FIRE PULL handle to
R expose the Fire Extinguisher Discharge Switch.

R I. Actuate and hold the Fire Extinguisher Discharge Switch to
R the MAIN DISCH (right) position.

R J. Measure 28V DC between main extinguisher initiator cartridge
R (squib) plug P17, pins 3 and 4 (ground) and pins 6 and 7
R (ground).

R K. Release the Fire Extinguisher Discharge Switch. Confirm
R that the switch returns to the center-off position and zero
R volts is reflected between the pins specified in Step J.

R L. Actuate and hold the Fire Extinguisher Discharge switch to
R the ALTN DISCH (left) position.

R M. Measure 28V DC between alternate extinguisher initiator
R cartridge (squib) plug P15, pins 3 and 4 (ground) and pins 6
R and 7 (ground).

R N. Release the Fire Extinguisher Discharge Switch. Confirm
R that the switch returns to the center-off position and zero
R volts is reflected between the pins specified in Step M.

R O. Push in the APU FIRE PULL handle. Confirm that
R spring-loaded guard covers handle.

R P. Reconnect and secure main extinguisher initiator cartridge
R plug P17 and alternate extinguisher initiator cartridge plug
R P15.

R Q. Close and secure the fire extinguisher container access
R panels opened in Step B.

R R. Close circuit breakers previously opened in Steps A(1) and
R (2).

R S. On the FE/SO FIRE EXTINGUISHER TEST panel, placard APU MAIN
R or ALTN SHORT TEST INOPERATIVE.

R T. Make appropriate entry in aircraft log book.

R 7. Procedure to Prevent APU Operation Due to Inoperative MAIN and
R ALTN SHORT TEST System

R A. On the FE/SO Aft Circuit Breaker Panel CB3, Open and tag the
R following circuit breakers:

R APU POWER-BAT PWR (B10)

R APU POWER-CONTROLLER-BUS 3 (B13)

R APU POWER-CONTROLLER-GND BUS (B14)

R APU POWER-CONTROL & PRI F/W SOV-GND BUS (B15)

R B. Verify that the BLEED AIR S/O switchlight on the FE/SO APU
R Control Panel is unlatched (out) and the OPEN legend is off.

R NOTE: Location of the APU BLEED AIR VALVE circuit breaker,
R reference Step C, will vary depending on airplane
R model designation.

R C. On Pilots Overhead Circuit Breaker Panel CB1, open and tag
R circuit breaker APU BLEED AIR VALVE H13

R OR

R On FE/SO Aft Circuit Breaker Panel CB3, open and tag circuit
R breaker APU BLEED AIR VALVE S18.

R D. Install appropriate APU INOPERATIVE and APU BLEED AIR
R SHUTOFF VALVE SECURED CLOSED placards in the flight station
R at a location clearly visible to the flight crew.

R E. Make appropriate entry in the aircraft log book.

FIRE EXTINGUISHER TEST PANEL - REMOVAL AND INSTALLATION

1. Referenced Procedure

26-21-00 Engine/APU Fire Extinguishing System - Adjustment and Test

2. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag the following FIRE EXTINGUISHER circuit breakers:

ENG 1 - MAIN (C10)

ENG 1 - ALTN (C11)

ENG 2 - MAIN (C12)

ENG 2 - ALTN (C13)

ENG 3 - MAIN (C14)

ENG 3 - ALTN (C15)

APU - MAIN (C16)

APU - ALTN (C17)

(2) On Flight Engineer/Second Officers overhead circuit breaker panel CB2, zone 215, open and tag circuit breaker INDICATOR - F/E IND LT TEST (H5).

(3) On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag circuit breaker 5 VAC PANEL LIGHTING - FE PANEL LIGHTS - UPPER NO. 1 (CC9).

(4) Release fasteners on front of FIRE EXTINGUISHER TEST panel, pull panel forward and disconnect electrical connector from rear of panel (Ref. Fig. 401).

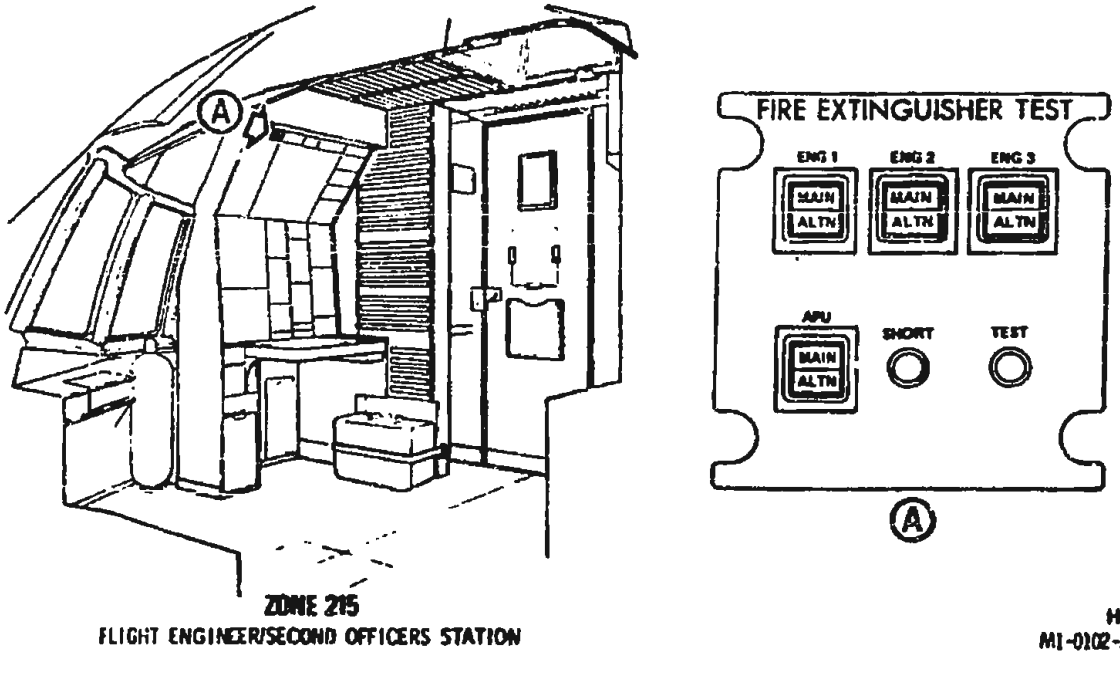
B. Installation

R (1) Verify circuit breakers opened in Steps 2A(1) through
R 2A(3) are open and tagged.

(2) Connect electrical connector at rear of panel, move panel into place and secure with front fasteners.

R (3) Remove tags and close circuit breakers opened in Steps
R 2A(1) through 2A(3).

(4) Verify operation of Fire Extinguisher Test panel (Ref. 26-21-00).



Fire Extinguisher Test Panel - Removal and Installation
Figure 401

APU EXTERNAL CONTROL PANEL - REMOVAL AND INSTALLATION

1. Referenced Procedure

26-21-16 APU External Control Panel - Adjustment/Test

49-00-01 Auxiliary Power Unit (APU) - Adjustment/Test

2. Removal/Installation

A. Removal

(1) On pilots overhead circuit breaker panel CB1, zone 210, open and tag the following circuit breakers:

R FIRE DETECTION - MASTER ALARM PWR - WHL WELL APU
R (J4)

R FIRE DETECTION - APU FIRE SHUTDOWN (J7)

R FIRE DETECTION - FIREBELL PWR (J6)

R FIRE DETECTION - APU SEC EMER SHUTOFF (J8)

R APU FIRE DETECT - MASTER ALARM PWR (D18)

R FIRE EXTINGUISHER - APU FIRE SHUTDOWN (C18)

R FIRE EXTINGUISHER - APU - MAIN (C16)

R FIRE EXTINGUISHER - APU - ALTN (C17)

R FUEL SHUTOFF VALVES - PRI EMER - 2 (D14)

R FUEL SHUTOFF VALVES - PRI EMER - APU (D15)

(2) On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag the following circuit breakers:

R APU POWER - APU GEN CONT UNIT (B17)

R APU BATT BUS - FIREWALL SHUTOFF - PRIM (S7)

R APU BATT BUS - FIREWALL SHUTOFF - SEC (S8)

(3) On Flight Engineer/Second Officers APU CONTROL panel verify MASTER POWER switch is off.

(4) Open the APU external control panel access door on the bottom centerline of the fuselage, zone 142 (Ref. Fig. 401).

(5) Release fasteners on APU external control panel and lower far enough to disconnect electrical connector at rear of panel.

B. Installation

(1) Verify that circuit breakers opened in Steps A(1) and A(2) are open and tagged.

(2) Verify APU MASTER POWER switch on APU CONTROL panel is off.

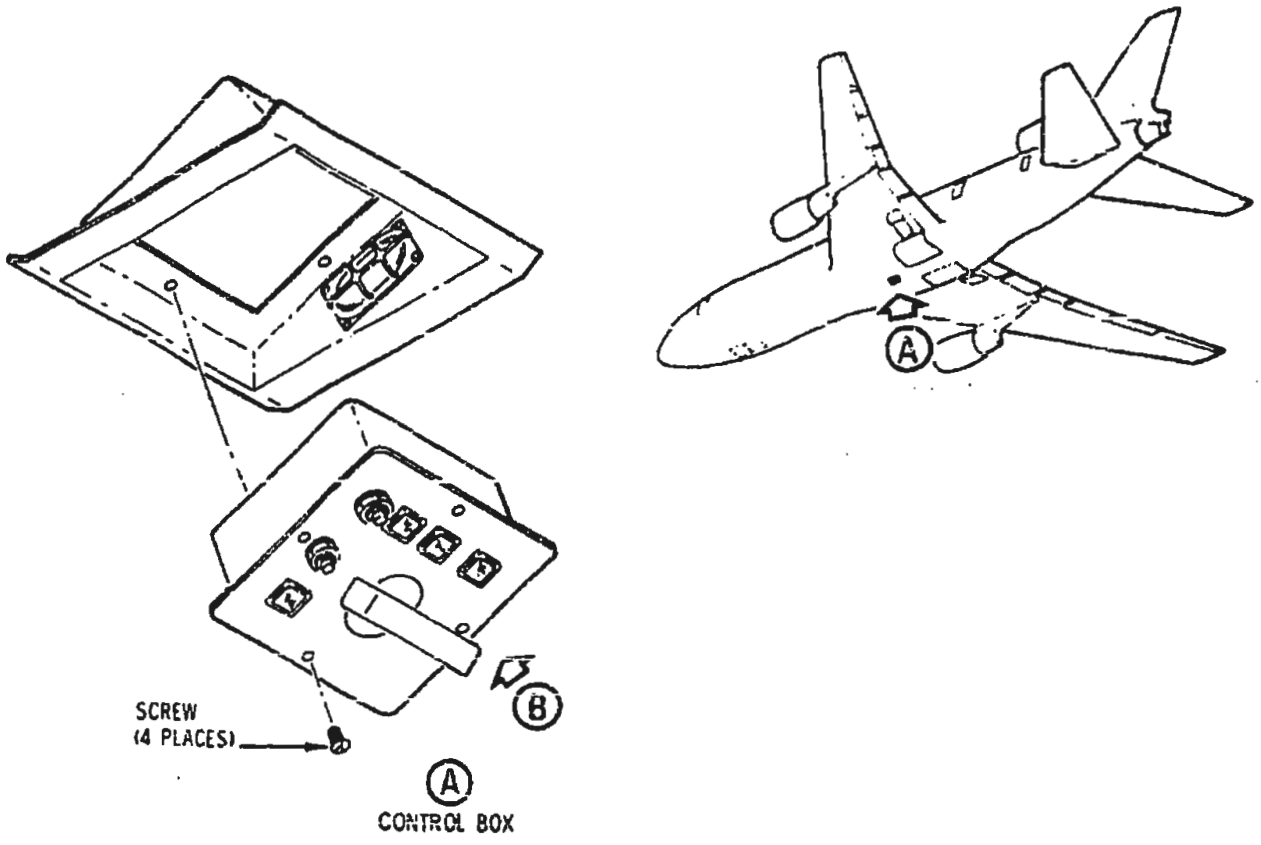
(3) Connect electrical connector at rear of panel, move panel into place and secure with front fasteners.

(4) Close and secure access door.

(5) Remove tags and close circuit breakers opened in Steps A(1) and A(2).

(6) Verify operation by performing adjustment and test procedure (Ref. 26-21-16).

R R (7) Perform APU Manual Fire Shutdown (APU Not Running) (Ref. 49-00-01).



APU External Control Panel - Removal and Installation
Figure 401

R APU EXTERNAL CONTROL PANEL - ADJUSTMENT AND TEST

R 1. General

R A test of the APU external control panel is normally performed as a part of the operational test for the APU and APU fire detection systems. When functionally testing the APU external control panel, operational APU and APU fire detection systems will be necessary. Refer to ATA Chapters 26 and 49 for correct operating procedures.

R 2. Referenced Procedures

R 6-40-00 Exterior Access Panels and Doors.

R 24-41-00 External Power/Ground Service System - Maintenance Practices.

R 49-00-01 Auxiliary Power Unit (APU) - Adjustment and Test.

R 3. Adjustment/Test

R A. Preparation

R (1) On lower afterbody, open fire extinguisher access panel 316 CB (Ref. 6-40-00).

R CAUTION: INSURE ELECTRIC POWER IS OFF BEFORE DISCONNECTING INITIATOR CARTRIDGE.

R (2) Disconnect APU main and alternate fire bottle electrical connectors at initiator cartridges (squibs).

R (3) Turn on electrical power (24-41-00).

R (4) Before actuating APU FIRE PULL handle, open and tag following circuit breakers:

R On pilots overhead circuit breaker panel CB1, zone 210:

R APU SEC EMER SHUTOFF (J8)

R FUEL SHUTOFF VALVE - PRI EMER - APU (D15)

R On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag following circuit breakers:

R APU BAT BUS - FIREWALL SHUTOFF - PRIM (S7)

R APU BAT BUS - FIREWALL SHUTOFF - SEC (S8)

R B. Operational Test

R (1) On FIRE DETECTION LOOP TEST panel place all loop select R switches in BOTH position.

R (2) Depress and hold TEST A and TEST B pushbutton switches R (Ref. Fig. 501) and verify that:

R Red indicator light on FIRE PULL handle comes R on

R Master FIRE warning lights come on

R Loop A and B lights for ENG 1, ENG 2, ENG 3, R and APU come on

R FIRE DET LOOP light starts flashing then R remains on

R APU fire horn sounds

R FIRE light on the APU external control panel R comes on

R Fire alarm bell rings

R (3) On APU external control panel, pull down APU FIRE PULL R handle and verify that fire horn stops sounding (Ref. R Fig. 502).

R (4) Actuate (twist) FIRE PULL handle extinguisher discharge R switch to MAIN position and check for 28V dc at MAIN R fire bottle electrical connector pins 3 and 6.

R (5) Actuate (twist) FIRE PULL handle extinguisher discharge R switch to ALTN position and check for 28V dc at ALT R fire bottle electrical connector pins 3 and 6.

R (6) Return discharge switch to off position.

R (7) Return APU FIRE PULL handle to its fully stowed R position (APU Fire horn will again sound).

R (8) Release TEST A and TEST B pushbutton switches and R verify that:

R Red indicator light on FIRE PULL handle and R APU FIRE PULL handle go off

R Master FIRE warning light goes off

R Loop A and loop B lights for ENG 1, ENG 2, ENG
R 3, and APU go off

R FIRE DET LOOP light goes off

R Fire alarm bell stops ringing

R APU fire horn stops sounding

R FIRE light on the APU external control panel
R goes off

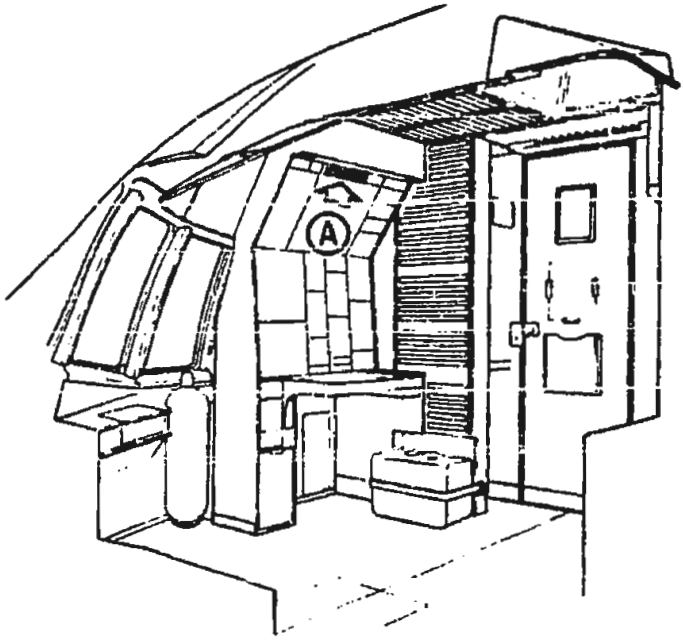
R (9) Remove electrical power (24-41-00).

R (10) Connect APU initiator cartridge electrical connectors.

R (11) Close fire extinguisher access panel 316CB (Ref.
R 6-40-00).

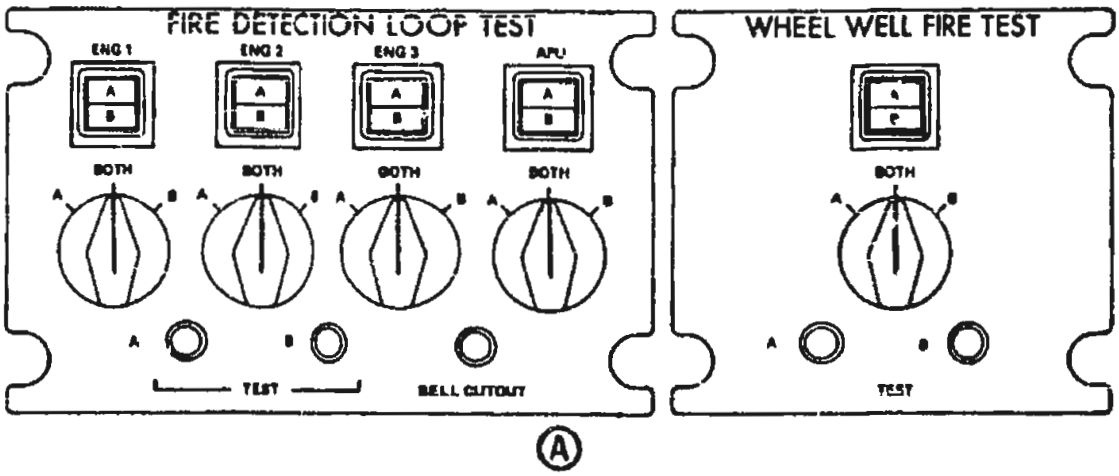
R (12) Remove tags and close circuit breakers opened in Step
R 3A(4).

R (13) Perform operational test of APU Manual Fire Shutdown
R (APU Not Running) (Ref. 49-00-01).



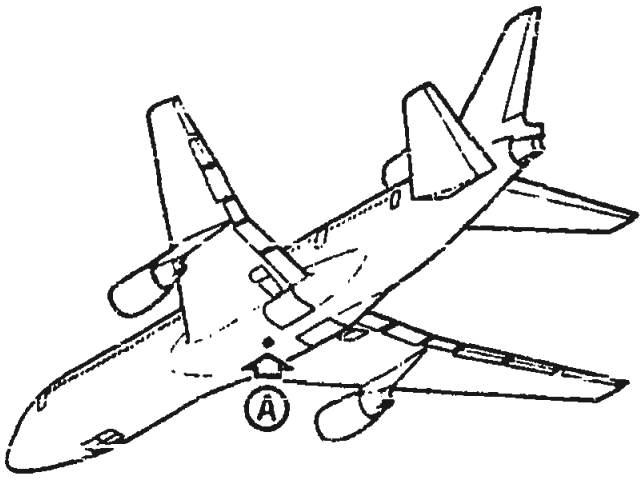
ZONE 215

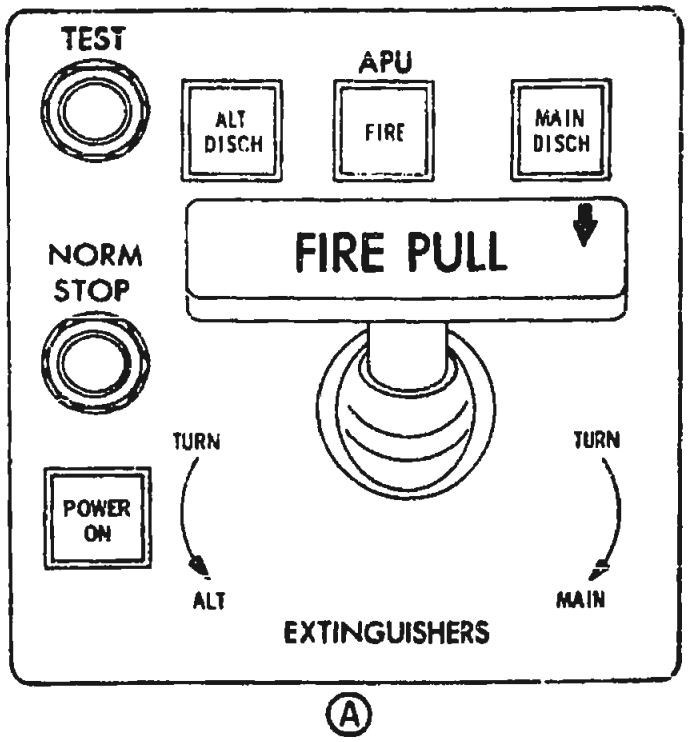
FLIGHT ENGINEER/SECOND OFFICERS STATION



HH 5173
M1-A00-26-018

R Fire Detection Loop Test and Wheel Well Fire Test Panels
R Figure 501





HH 5890
M1-A01-26-007

R APU External Control Panel
R Figure 502

R EFFECTIVITY: ALL
R
001B

PORTABLE FIRE EXTINGUISHERS - DESCRIPTION AND OPERATION

1. General

CR Portable water and Halon 1211 extinguishers are installed at strategic locations in the flight station, passenger compartment, and galley (Ref. Fig. 1).

The distribution is as follows:

C One Halon 1211 extinguisher in the flight station, aft of the Second Observers station, zone 211

C One Halon 1211 extinguisher in the passenger compartment, outboard of the left forward lavatory, zone 221

C One water extinguisher in the passenger compartment, forward
C side of RH class divider bulkhead.

C One Halon 1211 extinguisher in the passenger compartment, outboard of the left mid attendants seat, zone 241

One water extinguisher in the passenger compartment, outboard of the right mid attendants seat, zone 242

C One Halon 1211 extinguisher in the passenger compartment, on the left aft lower stowage compartment, zone 271

One water extinguisher in the passenger compartment, on the right aft lower stowage compartment, zone 272

C The complement of portable fire extinguishers located in the
C galley is as follows:

CR Two Halon 1211 extinguishers in the galley on bulkhead
C forward of the sink

The galley oven exhaust duct system terminates at an access panel door on the aft end of the duct (Ref. Fig. 2).

The opening into the duct behind the panel door enables the
C insertion of a Halon 1211 extinguisher nozzle to extinguish a fire in the duct.

The extinguishers are mounted on individual supports and held in position by quick-disconnect straps.

C 2. Halon Extinguisher

C A. Description and Operation

C (1) Halon extinguishers replace the carbon dioxide
C extinguishers and are intended for use on all types of
C fires but in particular on any electrical or flammable
C liquid type fire. (Ref. Fig. 3)

C (2) Discharge the extinguisher by pulling the locking pin
C at the handle and depressing the top lever.

3. Water Extinguisher

A. Description and Operation

The water extinguisher is a small, compact, portable unit used for Class A fires, such as combustible material fires (Ref. Fig. 4).

When completely assembled and fully charged with 1-3/8 quarts of water, the extinguisher weighs approximately 7 pounds.

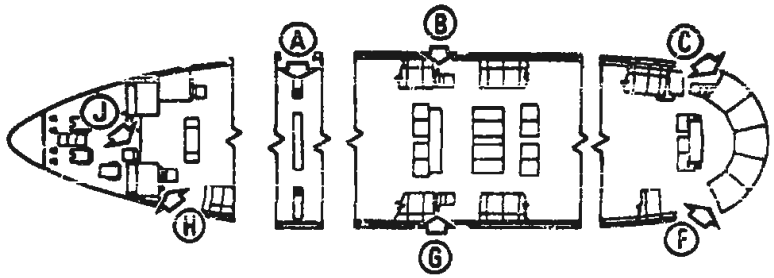
The extinguisher is operated by a carbon dioxide cartridge located inside the cartridge holder of the unit. Twisting the cartridge holder in the direction indicated by the arrow causes the carbon dioxide cartridge to be punctured, releasing the charge and pressurizing the cylinder.

C Depressing the lever allows the pressure in the cylinder to force the water through the nozzle. The time of discharge is between 30 and 40 seconds at a temperature of 70 degrees F. The discharge range is at least 20 feet.

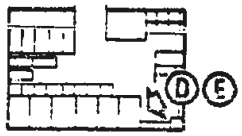
C 4. Dry Chemical Extinguishers

C A. Description and Operation

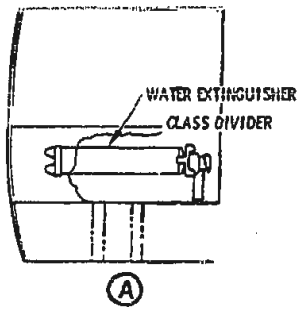
CR The dry chemical fire extinguisher has been replaced by a
CR Halon extinguisher.



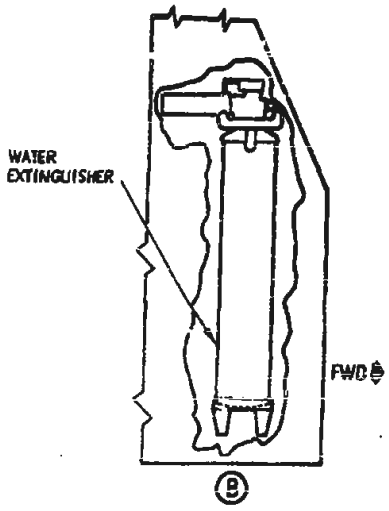
PLAN VIEW - PASSENGER COMPARTMENT



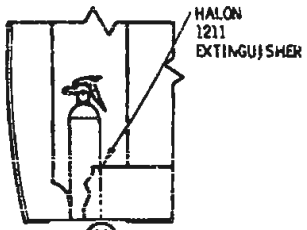
PLAN VIEW - UNDERFLOOR GALLEY



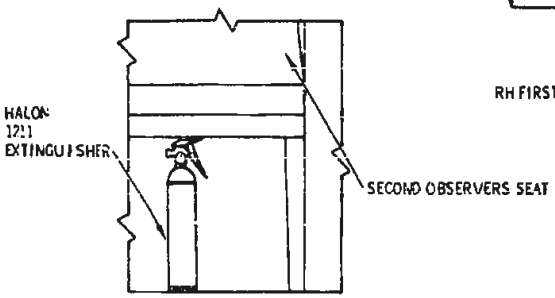
FORWARD SIDE OF
RH FIRST CLASS DIVIDER BULKHEAD



VIEW LOOKING INBOARD
OUTBOARD OF LEFT
MID ATTENDANTS SEAT



VIEW LOOKING FORWARD
OUTBOARD OF LEFT
FORWARD LAVATORY



VIEW LOOKING AFT
AFT OF SECOND OBSERVERS SEAT

NOTE

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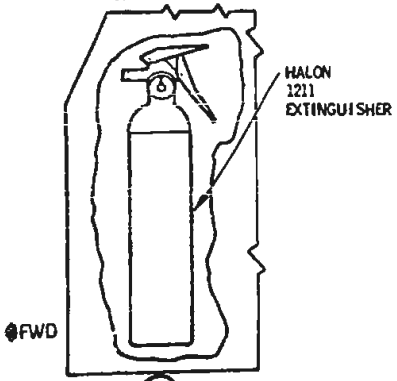
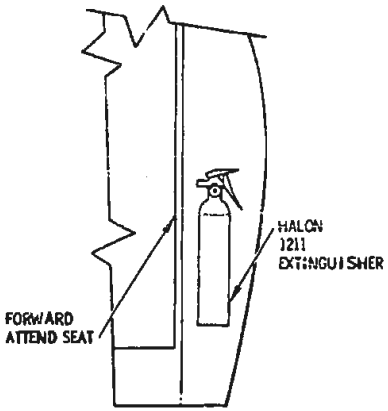
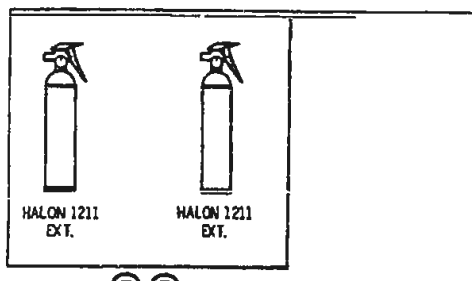


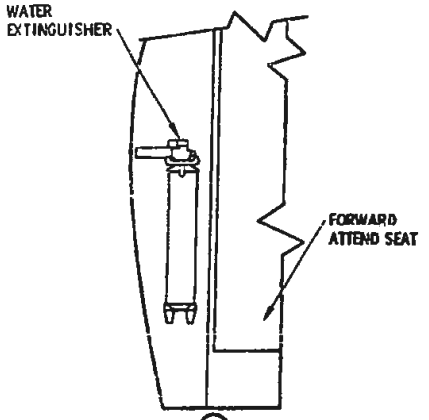
VIEW LOOKING INBOARD
OUTBOARD OF LEFT
MID ATTENDANTS SEAT



VIEW LOOKING AFT
LH LAV WALL



ON BULKHEAD FORWARD OF THE SINK



VIEW LOOKING AFT
RH LAV WALL

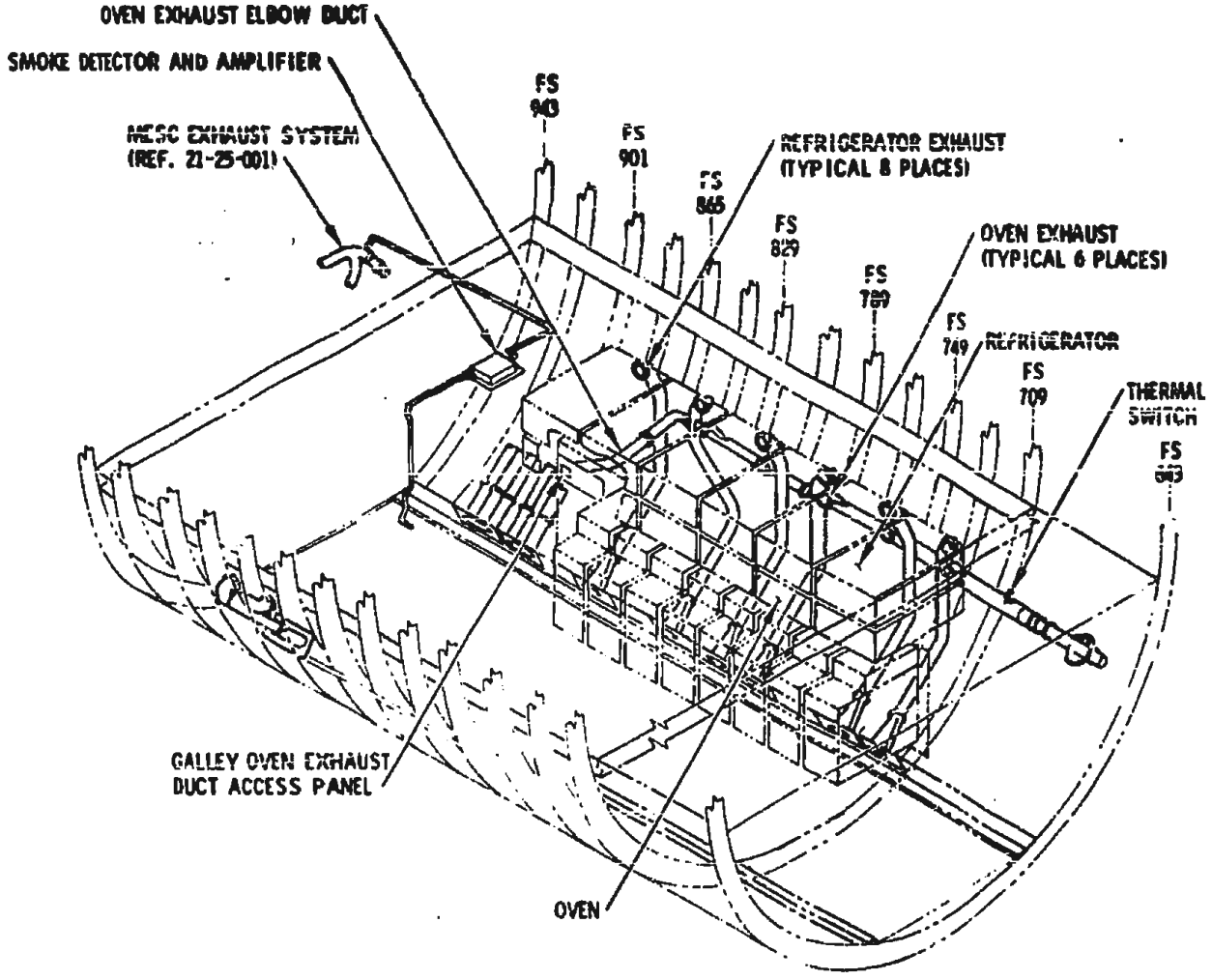
M1-0004-26-052

Portable Fire Extinguisher Location Diagram
Figure 1

CR
CR

EFFECTIVITY: ALL

0016



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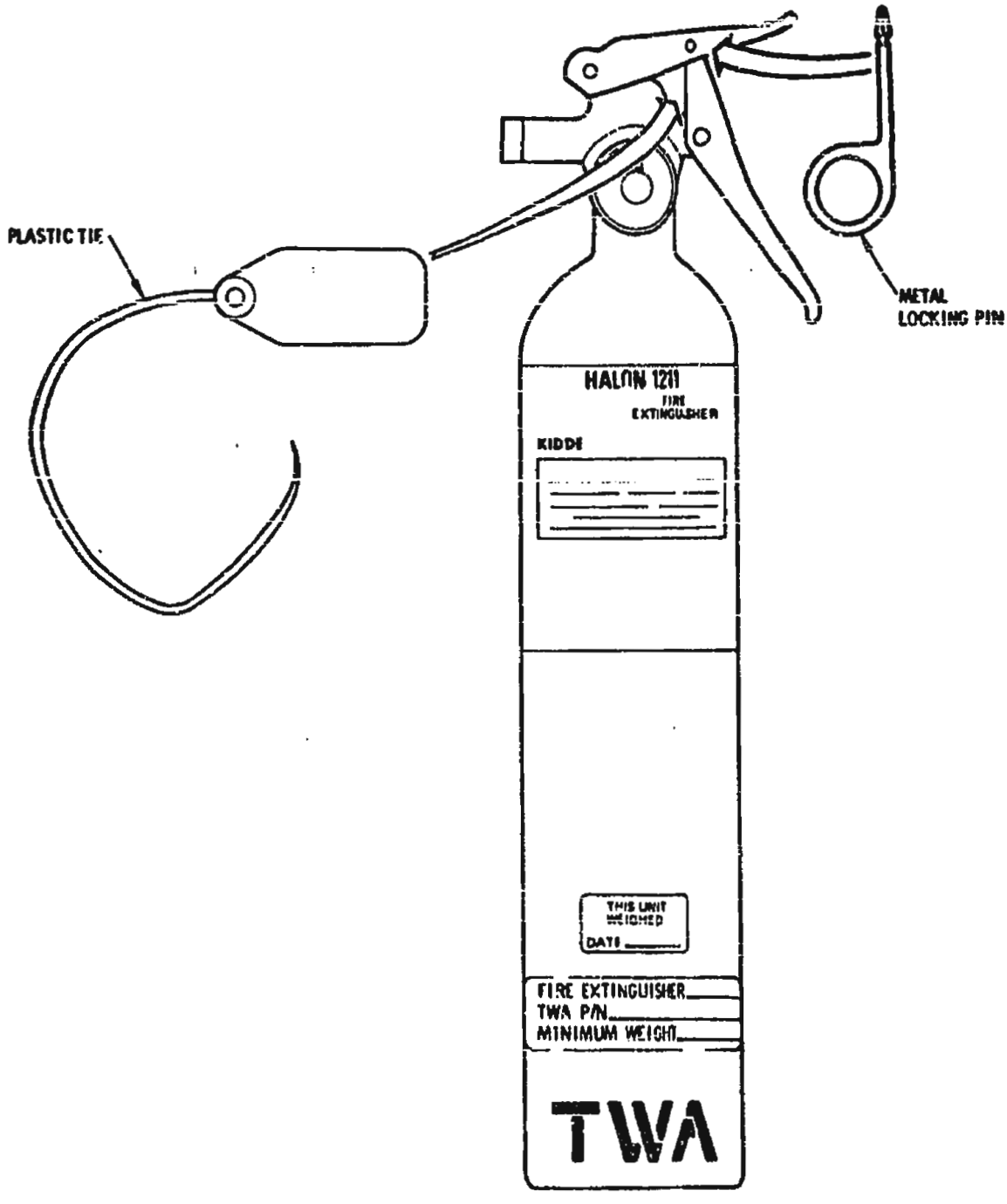
R Galley Oven Exhaust Duct System
R Figure 2

EFFECTIVITY: ALL

0018



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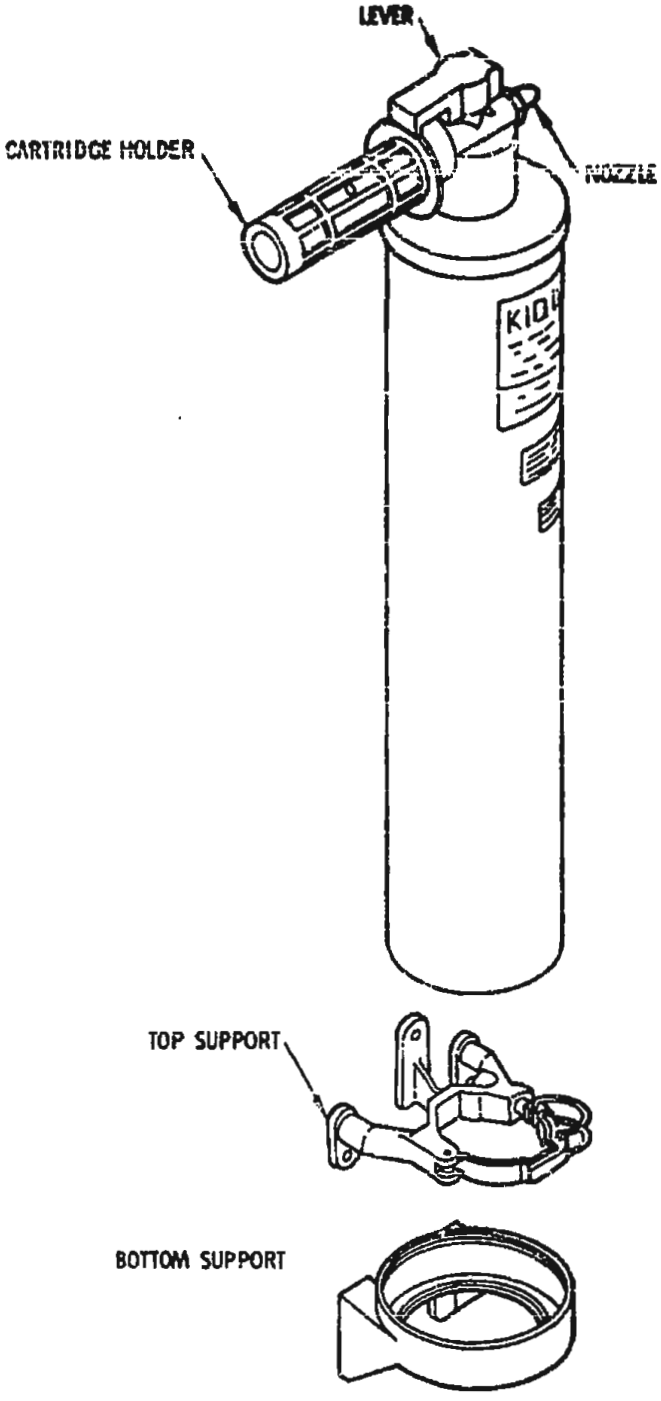
CR
CR

Halon Type Portable Fire Extinguisher
Figure 3

EFFECTIVITY: ALL

001B



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Water Extinguisher
Figure 4

C HALON 1211 TYPE FIRE EXTINGUISHER - INSPECTION/CHECK

C 1. Inspection/Check

C A. For location of extinguishers, see Maintenance Manual
C 26-22-00, Fig. 1.

CR B. Check manufacturer's date for last time shop checked.
C Maximum time an extinguisher can be in service is 10 years.

C C. Weigh the extinguisher to assure it has not been discharged.
C The minimum weight is 3.44 pounds as shown on placard on
C extinguisher. Enter date weighed on weighing label, TWA
C stk. Nbr. 46-0815 (Ref. Fig. 601). In the event the plastic
C locking pin at the handle has been pulled but the
C extinguisher has not been discharged, the locking pin must
C be replaced.

C NOTE: The extinguisher must be weighed to assure it has not
C been discharged prior to replacing a broken or
C missing locking pin.

C D. Check that locking pin is engaged and retained in place by a
C break-away plastic tie.

C E. Return all unserviceable extinguishers to MCI.

CR

WATER EXTINGUISHER - INSPECTION/CHECK

CR A. Inspection/Check

CR (1) For location of fire extinguishers, See Maintenance CR Manual, 26-22-00, Fig. 1.

CR (2) Check the service date for time since last shop check. CR Maximum time an extinguisher can be in service is 5 CR years.

CR (3) Check fire extinguishers for general condition, CR brackets for cracks and bracket locking features for CR condition.

CR (4) Check that the cartridge holder is sealed and safetied CR with 24 gauge (.020 diameter) copper wire.

CR (5) Check that the cartridge holder has not been screwed in CR so far as to allow lever to be depressed. Red line on CR handle must align with red line on head.

CR (6) Replace extinguishers that do not comply with the above CR checks.

CR B. Weighing

CR (1) Weigh the CO_2 cartridge in the handle.

CR (a) Remove seal and seal wire.

CR (b) Remove cartridge holder (handle) and CO_2 CR cartridge.

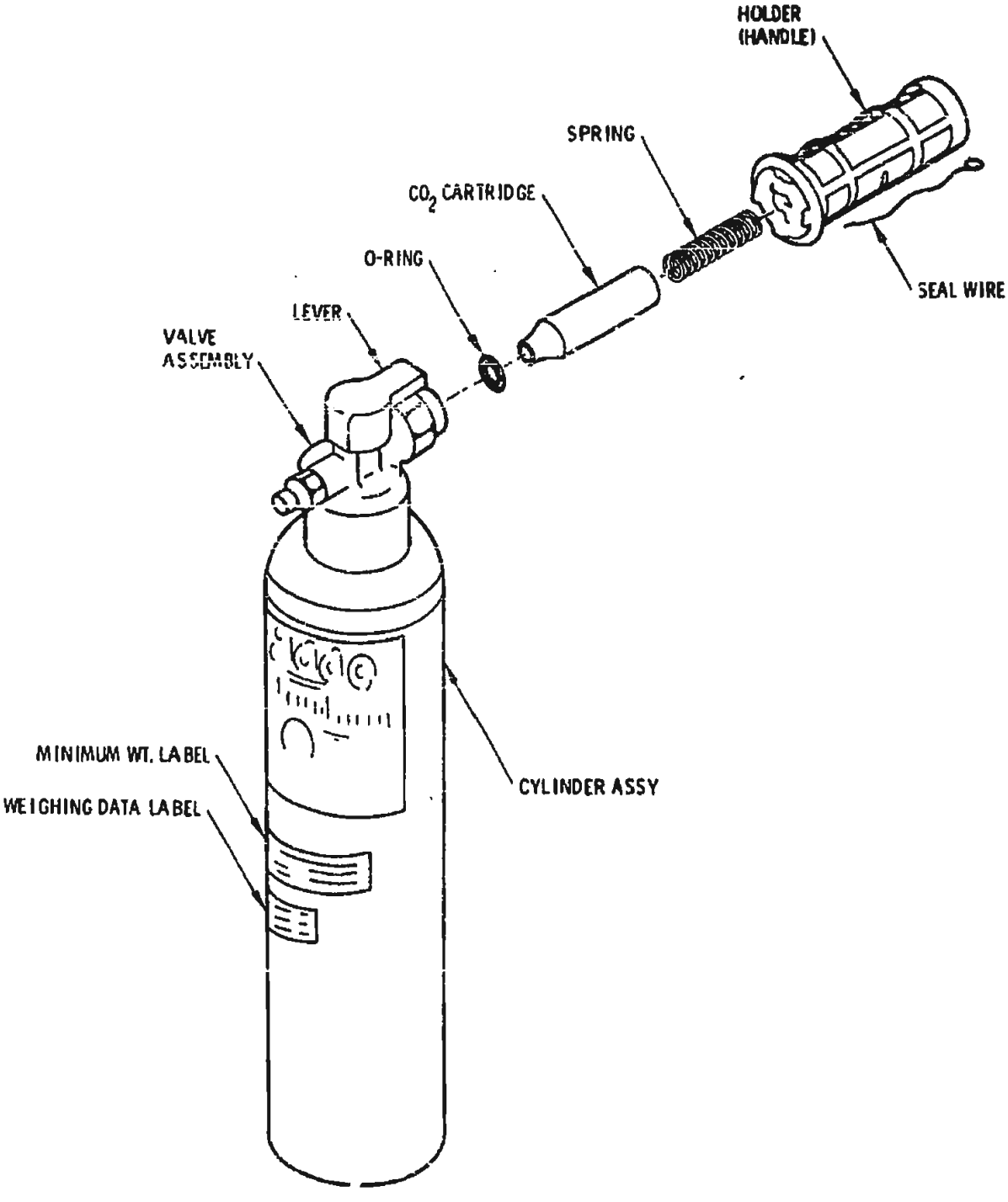
CR NOTE: Save spring in handle for re-installation.

CR (c) Weigh the CO_2 cartridge. Cartridge must weigh at CR least the minimum number of grams stamped on the CR cartridge.

CR (d) Install a serviceable CO_2 cartridge in the holder CR (handle) assuring that the tension spring is CR installed first.

CR CAUTION: DO NOT SCREW HANDLE IN BEYOND THE RED LINE. CR SOUND OF ESCAPING GAS INDICATES THE CO_2 CR CARTRIDGE IS PUNCTURED AND MUST BE REPLACED.

CR (e) Screw the holder (handle) inward on the valve body CR until the red line on the holder (handle) aligns



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CR
CR

Water Extinguisher
Figure 601.

EFFECTIVITY: ALL

002B

C with the red line on the valve body and the
C flanged collar aligns with the trigger lever.

C CAUTION: USE ONLY .020 DIA. COPPER WIRE. ANY OTHER
C WIRE MAY BE TOO STRONG TO BREAK BY HAND.

C (f) Safety the handle with 24 gauge (.020) copper
C wire.

C (2) Weigh the entire extinguisher.

C (a) Minimum weight is 6 1/2 pounds. If extinguisher
C meets weight requirements, install a weighing date
C label TWA Stk. Nbr. 46-0815 with the new weighing
C date.

C (b) If the extinguisher does not meet minimum weigh
C requirements, replace the extinguisher.

C (3) Return all unserviceable extinguishers to MCI.

CR LAVATORY WASTE BIN FIRE EXTINGUISHING
CR DESCRIPTION AND OPERATION

CR 1. General

CR A. The system is in four parts: (1) LH forward lavatory, (2) RH forward lavatory, (3) No. 1, No. 2 and No. 3 aft lavatories are coupled together on one firex bottle and (4) No. 4 and No. 5 aft lavatories are coupled together on one firex bottle. Operation of each system part is basically identical.

CR B. Each lavatory system part is automatically fired by a thermostat exposed to the waste bin and has test capability. There are no other controls or manual overrides. Each lavatory is equipped with a thermostat. Any of the thermostats in No. 1, No. 2, and No. 3 aft lavatory will fire the bottle in No. 2 lav; either the No. 4 of No. 5 aft lav thermostat will fire the bottle in No. 4 lav.

CR C. Each lavatory system part receives 28 vdc power from the "PAX SVC" circuit breaker located on the P-9 C.B. panel (See Fig. 5).

CR 2. Component Details

CR A. Lavatory Fire Extinguishing Bottle

CR (1) There is a bottle located in each forward lavatory and in No. 2 and No. 4 aft lavatories. Each bottle is equipped with a discharge head actuated by an electrically fired squib.

CR (2) The bottle is 3.00" dia. and (with head) about 13" long and is charged with 2.3 lbs. of Halon 1301. Total charged weight (incl. head) is about 3.6 lbs.

CR B. Thermostat

CR (1) One thermostat is located above the waste bin in each lavatory.

CR (2) The thermostat is normally "open" (electrically) and closes between 135°F and 170°F.

CR C. Test Switch Box

CR (1) A test switch box is located near each firex bottle.

CR (2) The box is equipped with a "push-to-test" switch and a
CR green light.

CR 3. System Operation (See Figures 1 thru 5)

CR A. Automatic Operation

CR (1) If, due to a fire in the waste bin (or other source)
CR the temperature above the bin is elevated beyond
CR 135°F., the thermostat will close at some temperature
CR not higher than 170°F.

CR (2) When the thermostat closes, 28 vdc power is applied to
CR the fire bottle squib, firing the squib and opening the
CR discharge head to the nozzle adjacent to the
CR thermostat.

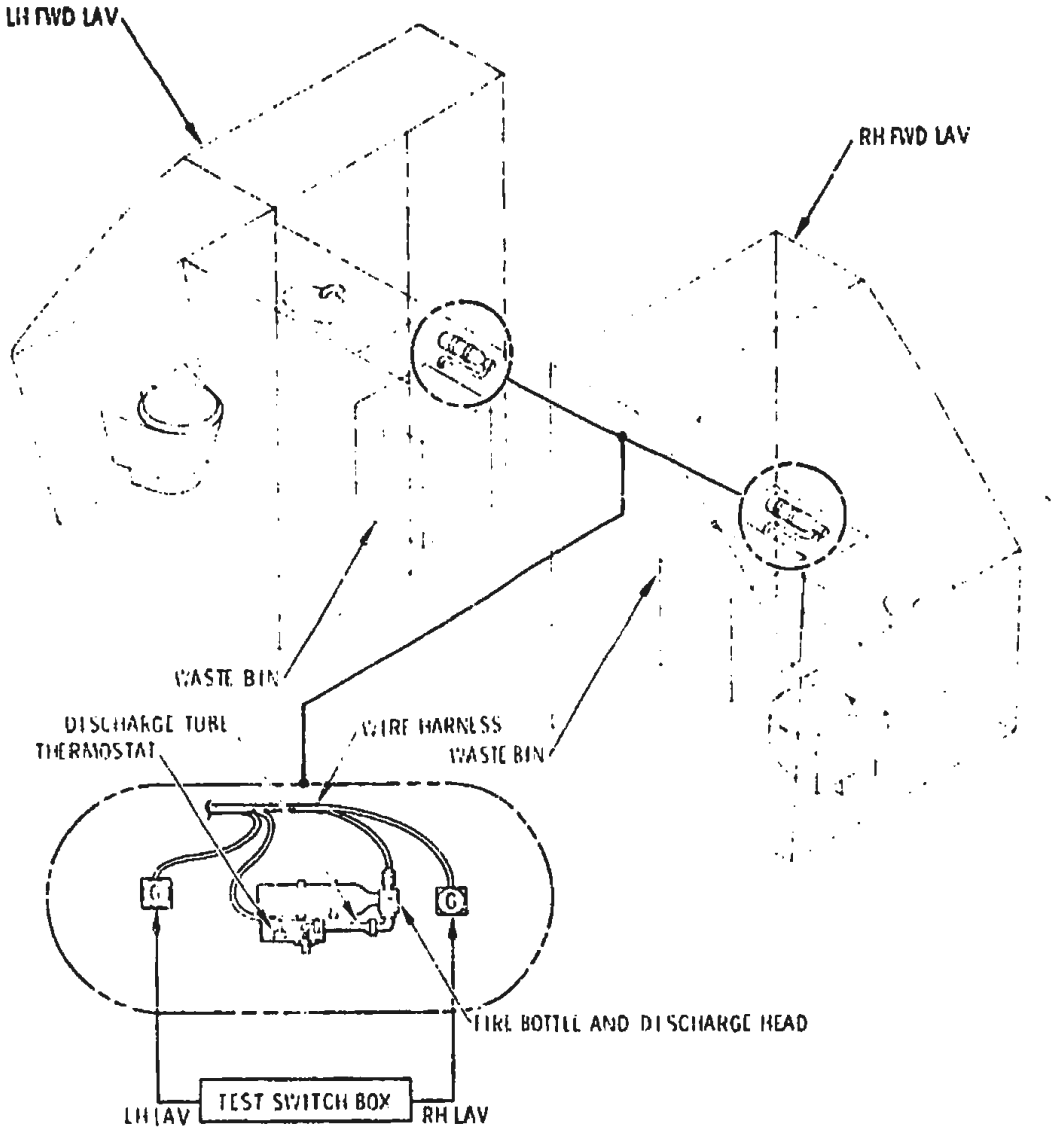
CR (3) With the discharge head open, all 2.3 lbs of Halon 1301
CR agent will discharge into the waste bin (fwd) or the
CR two or three coupled waste bins (aft).

CR B. Manual Override

CR None.

CR C. Squib Test

CR (1) When the switch on the test switch box is pushed, the
CR "green" light should come on, indicating no openings in
CR the circuit and a good squib.



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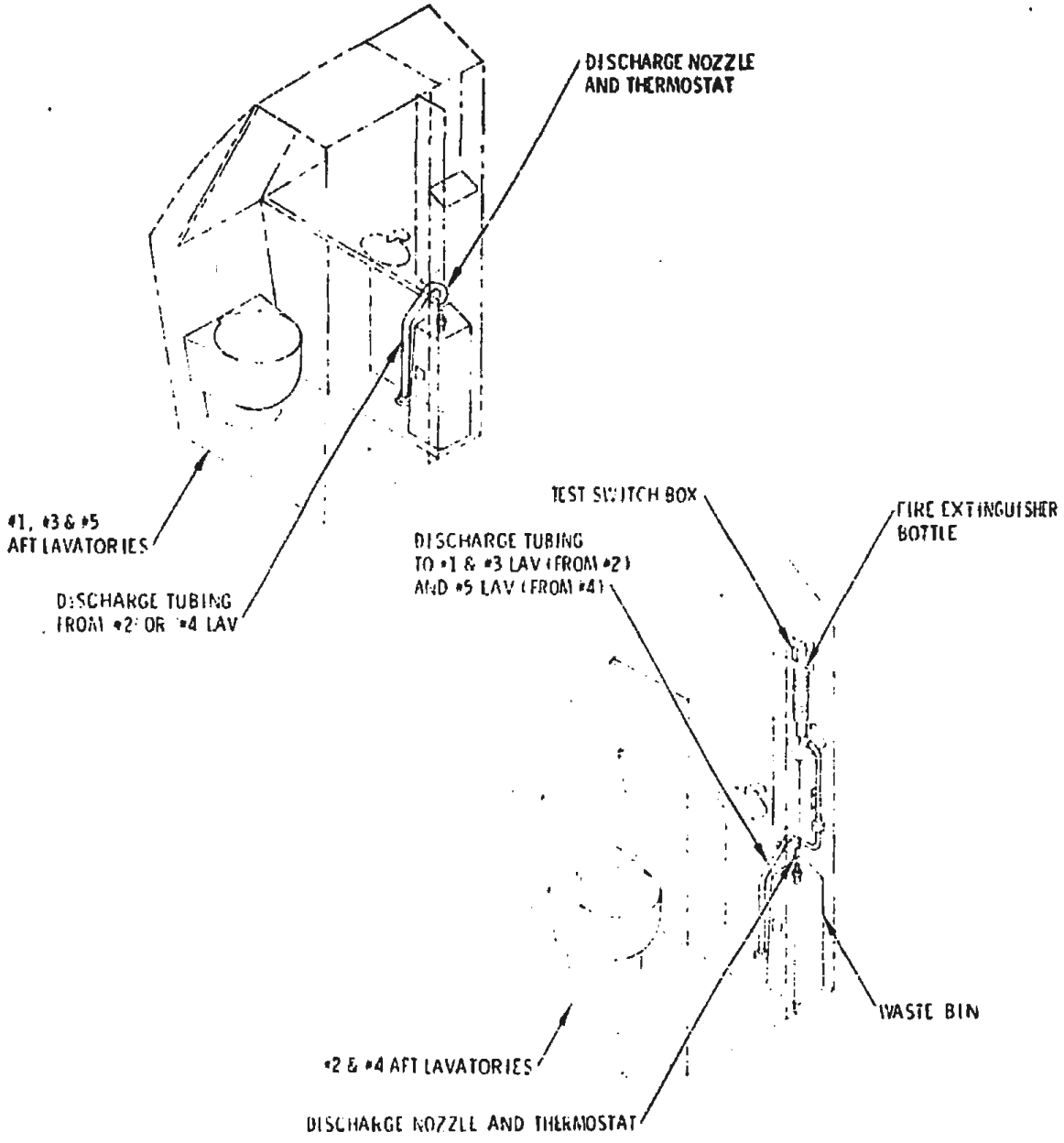
CR Waste Bin Fire Extinguishing - Forward Lavatories
CR Figure 1



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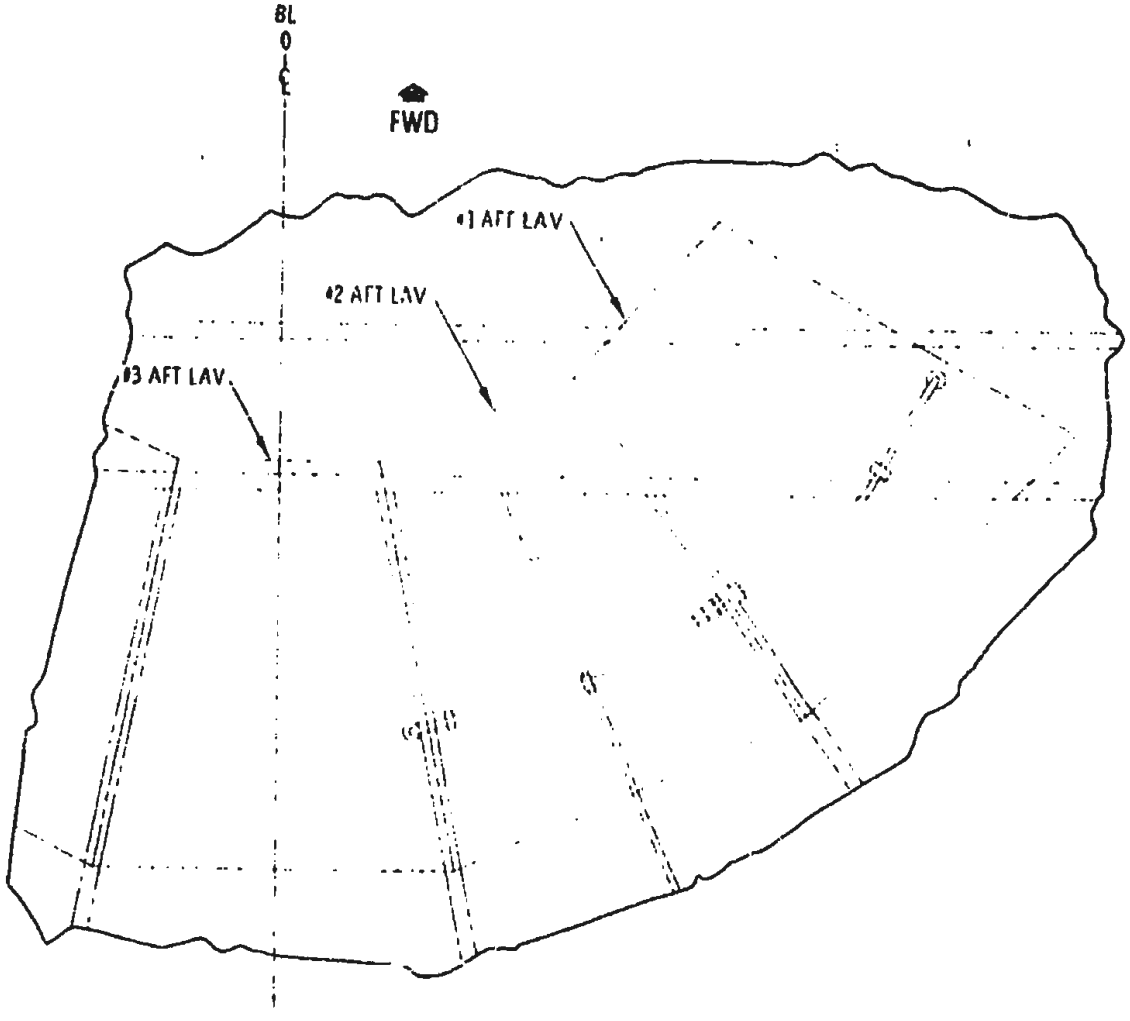
CR
CR

Waste Bin Fire Extinguishing - Aft Lavatories
Figure 2

R
R
003B

EFFECTIVITY: ALL

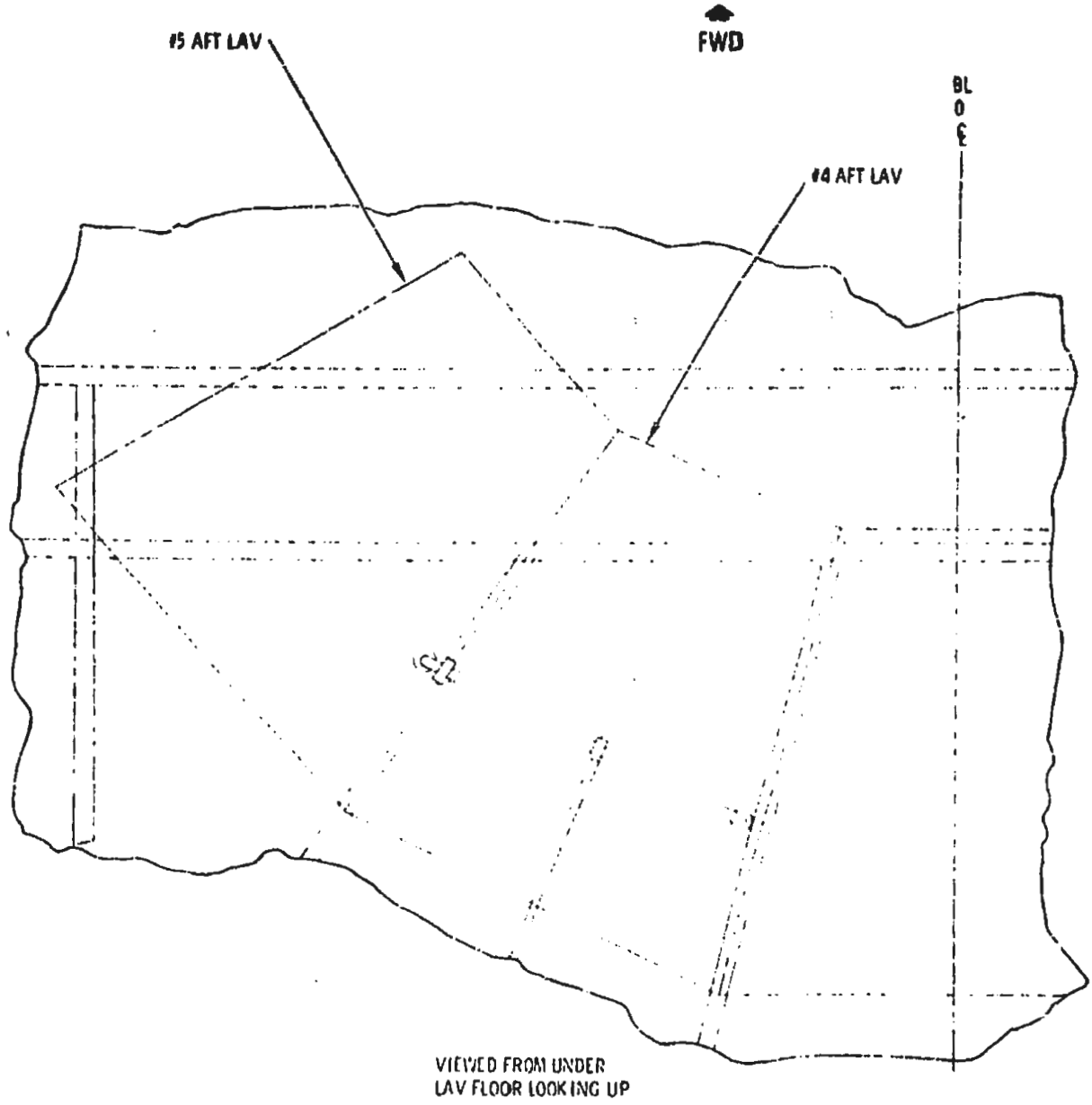


VIEWED FROM UNDER LAV
FLOOR LOOKING UP

MI-0000-26-1140

CR Waste Bin Fire Extinguishing - Aft Lav Underfloor Tubing Run
CR Figure 3

R EFFECTIVITY: ALL
R
003B



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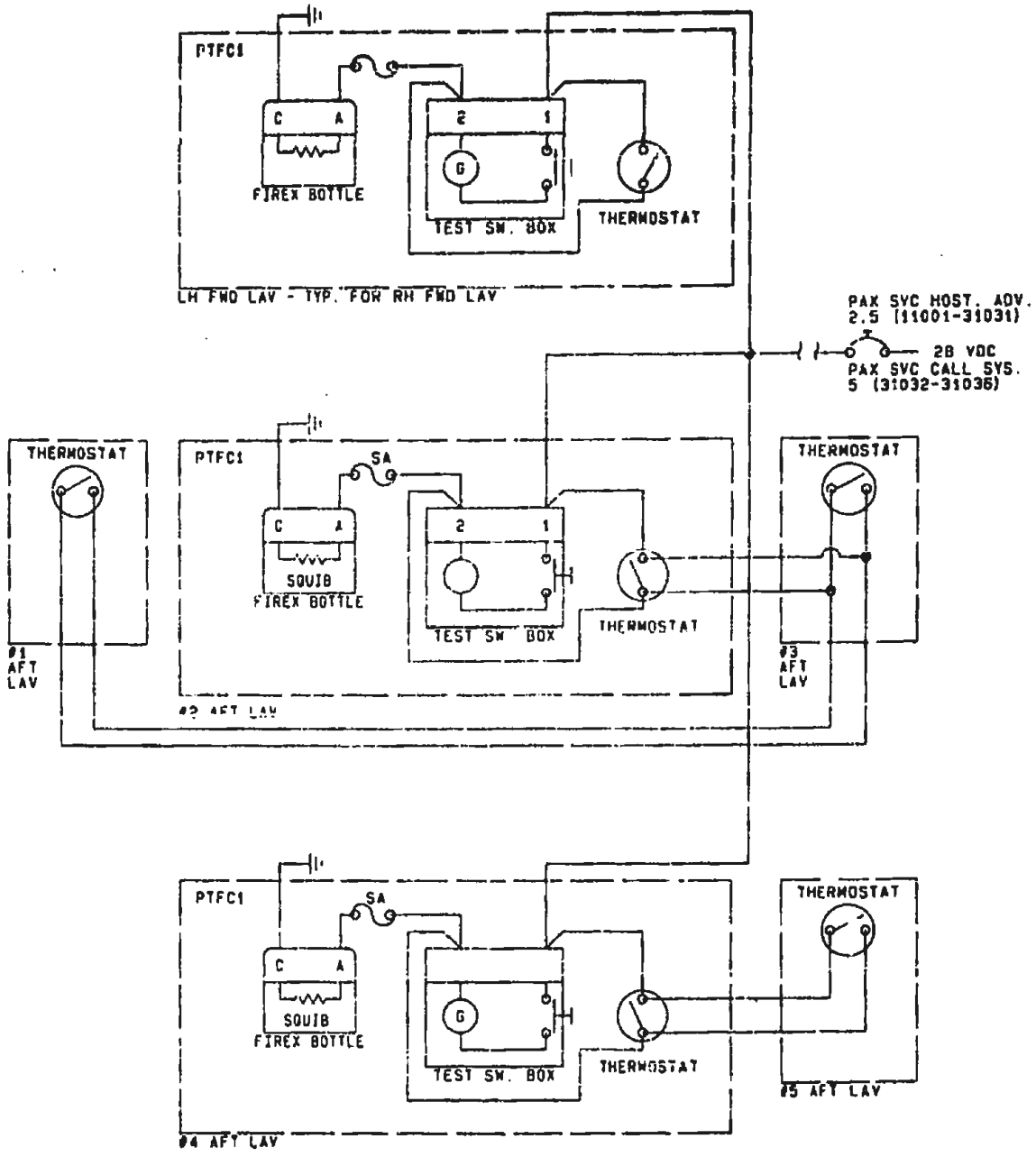
CR Waste Bin Fire Extinguishing - Aft Lav Underfloor Tubing Run
CR Figure 4

R EFFECTIVITY: ALL
R
003B



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CK
CR

Waste Bin Fire Extinguishing - Wiring Schematic
Figure 5

R EFFECTIVITY: ALL
R
003B

CR CR

LAVATORY WASTE BIN FIRE EXTINGUISHING TROUBLE SHOOTING

CR 1. General

CR A. This section deals with precautions and some CR trouble-shooting items. Actually, the system is very simple CR and can be troubleshot from the schematics in the System CR Description and Operation.

CR 2. Precautions

CR A. Anytime there is any evidence of a fire or high-heat in a CR trash bin, the following should be accomplished:

CR (1) Remove the associated firex bottle and weigh it (see CR Bottle Removal Procedure). If bottle weight shows full CR discharge, replace it with a new bottle.

CR (2) If firex bottle weight shows partial discharge (or CR leakage), replace it with a new bottle and perform a CR full "Operational Test".

CR (3) If firex bottle weight shows fully charged, reinstall CR it and perform a full "Operational Test".

CR (4) If the above checks must be deferred to flight CR termination or a major station:

CR (a) Remove the electrical connector from the bottle, CR cover it with a protective bag (or equivalent) and CR secure it.

CR (b) Place a protective cap over the bottle receptacle.

CR (c) Notify MCIMD for follow-up and scheduling of CR system checkout in the concerned lavatory as soon CR as parts/time are available.

CR B. Trouble-Shooting

CR (1) On fully charged firex bottle, when the test switch is CR depressed the green light does not glow, check as CR follows:

CR (a) 28 vdc power to the test switch box.

CR (b) Continuity from the test switch box to the firex CR electrical connector (pin A).

CR NOTE: There is a 5 amp. fuse in this line.

CR (c) Continuity from the firex bottle electrical
CR connector to aircraft ground.

CR (d) 28 vdc power at pin A of the firex bottle when
CR test switch is pushed (bad test switch box if
CR not).

CR (e) No problems above, replace firex bottle (bad
CR squib).

CR (2) On an apparently discharged ("fired") firex bottle, the
CR green light glows when the test switch is pushed.

CR (a) This does not necessarily indicate a good squib.
CR Sometimes (very infrequently) a "fired" squib will
CR short across. If this occurs right after a firing
CR (thermostat still hot), the "PAX SVC HOST ADV (or
CR "PAX SVC CALL") circuit breaker should "pop".

C C LAVATORY FIRE EXTINGUISHING OPERATIONAL TEST

C 1. General

C A. This section contains the full operational test and is C identical for each lavatory (fwd) or coupled lavatories C (aft).

C 2. Operational Test (See Figures 1 thru 5 in System Operation)

C A. Equipment

C (1) Volt-Ohmmeter-Ammeter (scale - 50 vdc and 50 ma).

CR (2) Heat Gun or equivalent heat source.

CR NOTE: Minimum of 200°F required to trip thermostat.

C (3) Deleted

C B. Prepare for Test

C (1) Remove connector PTFC1 from firex bottle and secure, C assuring isolation from any metal contact.

C (2) At P-9 c.b. panel in cockpit, assure "PAX SVC HOST ADV" C (or "PAX SVC CALL") c.b. is closed, with power on the C aircraft.

C C. Operational Test

C (1) At terminal No. 1 of the test switch box, check for 28 C vdc power; check for no voltage at terminal No. 2.

C (2) Check for no voltage at pin A on bottle connector C PTFC1.

C (3) Check for continuity to aircraft ground from pin C on C bottle connector PTFC1.

C (4) Using a heat source, (remove waste bin), raise the C temperature of the thermostat until 28 vdc voltage C appears at pin A on bottle connector PTFC1.

C (5) Remove heat source and allow thermostat to cool, C observing that 28 vdc voltage disappears as the C thermostat cools.

C (6) Repeat steps (4) and (5) for aft lavatories No. 1, No. 3, and No. 5.

C (7) Set ammeter to read milliamps and connect across pins A and C of bottle connector PTFC1. Push "test" button on test switch box and check that current is 10 - 20 ma. Release test button and observe no current.

C (8) Assure no voltage on any pin in bottle connector PTFC1; connect and safety connector to bottle.

C (9) Push test button on switch test box; observe green light glows and goes out when button is released.

C D. Post-Operational Test

C (1) Close up lavatory areas and return aircraft to normal.

R LAVATORY FIRE EXTINGUISHER CONTAINERS - INSPECTION AND CHECK

R 1. Referenced Procedure

R 26-24-01 Lavatory Fire Extinguishing System - Removal and
R Installation

R 2. Inspection/Check

R A. Weight Check

R (1) Remove fire extinguisher container (Ref. 26-24-01).

R (2) Weigh the container. Charged weight should be 13.6±2
R ounces (387±60 grams).

R (3) Reinstall fire extinguisher container (Ref. 26-24-01).

CR CR

LAVATORY FIRE EXTINGUISHER BOTTLE REMOVAL/INSTALLATION

CR 1. General

CR A. The following procedure applies to LH/RH forward and No. CR 2/No. 4 aft lavatories on all modified aircraft.

CR 2. Removal (See Figures 1 thru 5 in System Operation)

CR A. At P-9 c.b. panel, open and block the "PAX SVC HOST ADV" (or CR "PAX SVC CALL") circuit breaker.

CR B. Gain access to the lavatory and locate the firex bottle.

CR C. Remove electrical connector from bottle, remove tubing from CR bottle discharge fitting, loosen (or open) clamps and remove CR bottle.

CR D. Remove the elbow (or union) fitting from the discharge port CR of the head; this fitting is needed for the replacement CR bottle.

CR NOTE: If the bottle is being removed for weighing only and CR is to be reinstalled in the same location, this CR fitting may be left installed.

CR E. Weigh the bottle (including the head):

CR (1) If the bottle weighs about 1.5 lbs, it is fully CR discharged.

CR (2) If the bottle weight is between 2.0 lbs. and the weight CR marked on the bottle (less six ounces), the bottle is a CR "leaker".

CR (3) If the bottle weighs more than 6 ounces under the CR marked bottle weight, the bottle is still fully charged CR and is being removed for some form of malfunction CR (galled threads, "open" cartridge, etc.).

CR NOTE: If the weight marking on the bottle is CR unreadable use 3.20 lbs. as minimum total weight CR for a full charge.

CR F. Ship bottle back to MCI in an approved container; clearly CR mark the tag with plane, lav location, station, date and CR reson for removal.

CR 3. Installation (See Figures 1 thru 5 in System Operation)

CR A. Equipment

CR (1) Voltmeter (0-50 vdc)

CR B. Assure "PAX SVC HOST ADV" (or "PAX SVC CALL") c.b. on P-9
CR c.b. panel is open and blocked.

CR C. Gain access to the lavatory area.

CR D. Weigh the new bottle prior to installation. Weight must not
CR be less than 6 ounces under the weight marked on the bottle;
CR if marking on bottle is not readable, use 3.20 lbs. as
CR minimum total weight.

CR E. If not already installed, install elbow (or union) in
CR discharge port (use fitting removed from old bottle in Step
CR 2.D. above). Fitting is a pipe thread into discharge port;
CR wrap threads with teflon tape (or equivalent) to prevent
CR galling. Also, if fitting is an elbow, assure fitting is
CR properly oriented.

CR F. Install new bottle in support bracket, tighten clamps,
CR install tube on discharge port fitting.

CR G. Unblock and close the "PAX SVC HOST ADV" (or "PAX SVC CALL")
CR c.b. on the P-9 c.b. panel.

CR H. Check for absence of voltage on all pins in the bottle
CR electrical connector PTFC1. If no voltage present, connect
CR PTFC1 to firex bottle.

CR I. Push the test button on the test switch box and observe the
CR green light glows then goes out when button is released.

CR J. Close up the lavatory under-table area.

C C LAVATORY FIRE EXTINGUISHER THERMOSTAT
REMOVAL/INSTALLATION

C 1. General

C A. The following procedure applies to all lavatories on all C modified aircraft.

C B. Generally, the only reason (other than pigtail damage or C physical abuse) for changing the thermostat is failure to C meet the "heat" test (see Steps C.4 and C.5 in the C Operational Test).

C 2. Removal (See Figures 1 thru 5 in System Operation & W/D C 26-24-01)

C A. At P-9 c.b. panel, open and block the "PAX SVC HOST ADV" (or C "PAX SVC CALL") circuit breaker.

C B. Gain access to the lavatory (all lavs) area and locate the C associated test switch box (LH/RH fwd, No. 2 aft, No. 4 aft C - See Figure 5, wiring schematic) and the thermostat.

C C. Disconnect the thermostat pigtail leads from the test switch C box terminals No. 1 and No. 2 (LH/RH fwd, No. 2 aft, No. 4 C aft) or from splices/electrical connector (No. 1 aft, No. 3 C aft, No. 5 aft).

C D. Remove thermostat from support bracket; save hardware for C thermostat installation.

C E. Send thermostat to MCIES - Systems Engineering with C following information: plane, lav position, station, date C and reason for removal.

C 3. Installation (See Figures 1 thru 5 in System Operation)

C A. Equipment

C (1) Volt-Ohmmeter (0-50 vdc range)

CR (2) Heat Gun or equivalent heat source.

CR NOTE: Minimum of 200°F required to trip thermostat.

CR (3) Deleted

C B. Assure "PAX SVC HOST ADV" (or "PAX SVC CALL") c.b. on P-9
C panel is open and blocked.

C C. Gain access to the lavatory under-table area.

C D. Prior to installation, number new thermostat wires with heat
C shrink labels (or equivalent).

C (1) Check wire numbers on removed thermostat or see W/D
C 26-24-01. The thermostat is not polarized, therefore
C the order of numbering is immaterial.

C E. Attach the new thermostat to the support bracket.

C F. Connect thermostat wires to the test switch box.

C (1) Wire "TFC1004A22(XXX)" connects to terminal No. 1 and
C "TFC1005A22(XX)" connects to terminal No. 2.

C G. Remove electrical connector PTFC1 from the associated
C lavatory firex bottle.

C H. Unblock and close "PAX SVC HOST ADV" (or "PAX SVC CALL")
C c.b. on P-9 panel.

C I. Using a heat source inside the waste chute (remove waste
C bin), raise the temperature of the thermostat until 28 vdc
C voltage appears at pin A on bottle electrical connector
CR PFTC1.

C J. Remove heat source and allow thermostat to cool, observing
C that 28 vdc voltage disappears from pin A of bottle
C electrical connector PTFC1 as the thermostat cools.

C K. After thermostat is cool and there is no voltage on any
C connector pin, connect PTFC1 to firex bottle and safety.

C L. Push test button on test switch box; observe green light
C glows and goes out when button is released.

C M. Reinstall waste bin and close up lavatory area.